

MONTANA
STATE BOARD OF HEALTH
HELENA



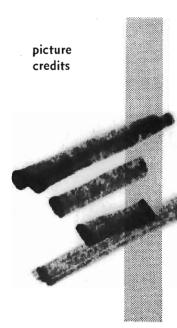
with tribute to those men and women who have contributed to Montana's health since the creation of the Board of Health March 15, 1901

vital statistics for the years 1950 and 1950 and

MCKEE PRINT.



| | Page |
|----------------------------|------|
| Staff | 4 |
| Board Members | 5 |
| Summary | 6 |
| History, 1901-1951 | |
| Central Administration | 11 |
| Bacteriological Laboratory | 33 |
| Child Health Services | |
| Dental Health | 57 |
| Disease Control | 65 |
| Environmental Sanitation | |
| Health Education | 111 |
| Hospital Facilities | 119 |
| Local Health Services | 129 |
| Public Health Nursing | |
| Vital Statistics Tables | |



A. E. Pedersen, Jr., page 23;
Mrs. Jean Freese, page 92;
Diamond Alkali Co., page 91;
Anaconda Copper Mining Co., pages 86, 87,
L. H. Jorud historical collection, cover (top); 149, 151, 153, 154;
The Billings Gazette, page 70.



STATE OF MONTANA STATE BOARD OF HEALTH HELENA, MONTANA

G. D. CARLYLE THOMPSON, M. D. EXECUTIVE OFFICER AND SECRETARY

December 15, 1952

Hon. John W. Bonner Governor of Montana State Capitol Helena, Montana

Dear Governor Bonner:

I herewith submit the Twenty-Sixth Biennial Report of the Montana State Board of Health.

Your interest and support during this biennium in the securing of well-qualified staff and in implementing Montana's health program is very highly regarded and appreciated.

Yours sincerely,

G. D. Carlyle Thompson, M.D.

GO Carly Mayson

Executive Officer

GDCT/vc

Staff of Montana State Board of Health

(July 1, 1950 to June 30, 1952)

Administration

G. D. Carlyle Thompson, M.D., M.P.H., executive officer. Elmer F. Newell, administrative officer. L. L. Benepe, registrar, vital statistics.

Child Health Services Division

Paul R. Ensign, M.D., M.P.H., director. Walter H. Hagen, M.D., director Cerebral Palsy center. Betty S. Gilson, M.D., director of Rheumatic Fever center.

Dental Health Division

Francis I. Livingston, D.D.S., M.S.P.H., director.

Disease Control Division

W. F. Kimmell, M.D., director of Tuberculosis Control and Chest X-ray Survey.

Local Health Services Division

L. S. McLean, M.D., M.P.H., director.

Environmental Sanitation Division

C. W. Brinck, director. H. B. Foote, acting chief of Water Section. Harvey Taylor, acting chief of Sewage Section. Elton M. Andrew, acting chief of General Sanitation Section.

Health Education Division

K. Elizabeth Anderson, director.

Public Health Nursing Division

Wava L. Dixon, director.

Hospital Facilities Division

Robert J. Munzenrider, director.

Hygienic Laboratory

Edith Kuhns, director

^{*} Kenneth E. Markuson, M. D., director from June 10, 1951 to June 10, 1952.

MEMBERS BOARD

26th BIENNIAL REPORT; STATE BOARD OF HEALTH



MONTANA STATA BOARD OF HEALTH—Pictured above are the members of the State Board of Health at the board's first quarterly meeting in 1951, From right to left: W. L. Beal, D.D.S., Anaconda; Mrs. Ronald Holtz, Flowerce; B. C. Farrand, M.D., Jordan; Miss Mary McNelis, Butte; G. D. Car'yle Thompson, M.D., board secretary and executive officer; E. S. Murphy, M.D., Missoula; Mrs. A. W. Mihelic, the executive officer's secretary. Two members of the board, R. J. McGregor, M.D., Great Falls, and George J. Grover, Deer Lodge, are not shown in the above picture.

Montana State Board of Health

(July 1, 1950—June 30, 1951)

| Miss Mary McNelis, president | Butte |
|---|------------|
| W. L. Beal, D.D.S., vice-president | Anaconda |
| Mrs. Charlotte Holtz, secretary (1) | Floweree |
| G. D. Carlyle Thompson, M.D., secretary (2) | |
| E. S. Murphy, M.D. | Missoula |
| B. C. Farrand, M.D. | Jordan |
| R. J. McGregor, M.D. | |
| George J. Grover (3) | Deer Lodge |
| Walter E. Clark (4) | Havre |
| | |

J. K. Shafer M.D., M.P.H., acting Executive Officer (June 19, 1950 to July 31, 1950) G. D. Carlyle Thompson, M.D., M.P.H., Executive Officer (August 1, 1950 to June 30, 1952)

MONTANA STATE BOARD OF HEALTH

(July 1, 1951 to June 30, 1952)

| E. S. Murphy, M.D., president | Missoula |
|--|--------------|
| Mrs. Charlette Holtz, vice-president | Floweree |
| G. D. Carllyle Thompson, M.D., secretary | Heleno |
| Miss Mary McNelis | |
| W. L. Beal, D.D.S. | Anaconda |
| B. C. Farrand, M.D. | Jordan |
| R. J. McGregor, M.D. | Great Falls |
| George J. Grover | Deer Lodge |
| G. D. Carlyle Thompson, M.D., M.P.H., Execut | tive Officer |

⁽¹⁾ Secretary to board until Sept. 15, 1950; (2) Named secretary to board Sept. 15, 1950; (3) Appointed July 1950; (4) Served until July 1950.

General Summary

This biennial might best be characterized as a period of delayed wartime and postwar adjustment for the staff and services of the State Board of Health. It is also the first complete biennium for the State Board of Health as reconstituted by the 1949 legislative assembly.

During the biennium, Montana enjoyed, generally, good health. In 1951 the lowest infant and maternal mortality rates in Montana's history were recorded. For the first time in the state's history, two consecutive years (1950 and 1951) passed without a case of smallpox being reported. This smallpox record is not only a measure of some success; it is a challenge to continuation of the record for many years.

Poliomyelitis (infantile paralysis) was the principal communicable disease problem with 136 cases reported in 1951, the fourth highest year in Montana's history.

The principal public health emergency during the biennium was the Milk River flood during which State Board of Health staff, in all categories, gave extensive aid to the flooded areas. No disease outbreak occurred in the flooded areas with the record marred by only one case of typhoid fever in an uncooperative individual

The biennium began with many vacancies on the staff and with a salary plan so low that it was impossible to employ and retain qualified staff. With the support of private and professional groups within the state, the State Board of Health with the close cooperation and approval of the State Board of Examiners, developed and placed in operation early in the biennium a completely new job classification plan and salary plan for employees of the Board. Following this, recruitment of qualified staff succeeded so that at the end of the biennium there remained only 7 vacant professional and technical staff positions. Included in these vacancies was only one key position, that of Director of the Division of Disease Control.

The Board's new employment and job classification plan also required considerable staff reorganization. Most of this was accomplished by the end of the biennium. The reorganization of the staff was concerned principally with improved services to the citizens of Montana through more efficient utilization of staff in all fields, particularly in administration, sanitation, laboratory and disease control activities. Improved office personnel and fiscal procedures were also initiated.

The Board adopted a major change in policy effecting relationships between the State Board of Health and local Boards of Health with regard to public health work in cities and counties. The purpose was to clearly recognize local responsibility—in the broadest sense—for public health activities at the local level with the State Board of Health offering consultation and assistance where needed and desired. Discontinuance of direct payment of salary and expenses of public health staff working at the local level was the first practical application of this policy. Now the procedure is for the State Board of Health to make payment of such funds directly to the local official agency; the local agency then pays such salaries and ex-

penses and is clearly responsible for the employment and direction of the local public health staff.

In the field of sanitation, the Board gave major attention to water supplies and sewage disposal. The Board took specific action to secure safe water supplies in 19 communities where safe water was not being supplied to the public. In establishing a seven-year plan for the abatement of existing stream pollution in Montana, the Board developed controls to prevent the start or extention of any raw sewage into streams within the state.

Montana's first mosquito control project was initiated in this report period with the cooperation of many interested groups. The problem of improved sanitation in food handling establishments, hotels and motels was recognized but increased activities in this area were not possible because of personnel shortage.

The first full-time Director of Local Health Services was appointed. The Cerebral Palsy Center program at Billings was made state-wide. Treasure State Health, a monthly bulletin of the State Board of Health, was initiated for distribution to interested citizens, professional persons, and public officials.

The advisory council on hospital licensing was activated and the advisory council on hospital construction met frequently in this report period. To review and recommended improvements in implementing legislative direction, with regard to narcotic education, a state-wide advisory committee on narcotics and alcoholism was established and is now studying the problem. The Montana Health Planning Council greatly increased its activities and assisted materially with general advice, guidance and support during this biennial period of adjustment.

As an impotrant step in developing improved health services for the school-age child, the Executive Officer of the Board and the State Superintendent of Public Instruction formally established a joint staff committee between the two departments to permit more effective planning of services and utilization of staff in Montana school health activities.

Rosebud and Big Horn county commissioners authorized the first full-time district health department to begin operations July 1, 1952. Missoula's city-county health department again began a full-time health department, thus making a total of four full-time health departments involving five counties at the end of the biennium.

Controlled fluoridation of public water supplies was an important development in the biennium with the Board's establishment of policies and standards governing fluoridation. Two cities started fluoridation of their public water supplies and three more have been approved for fluoridation.

Extensive cooperative planning with the Montana Tuberculosis Association occurred during the closing months of the biennium. The activation of these plans in the next biennium should result in an increase from an average of 39% of past years to 70% or 80% of Montana's citizens receiving chest X-rays. The additional cost involved in developing this program will be repaid many times by the increased number of persons X-rayed.

Montana's oldtimers recognize the many public health improvements in this state in the last 50 years. They know how it was around the turn of the century.

The improved public health we enjoy today in Montana is, in a large measure, the product of 50 years of work and devotion by a few men and women. In this age of safe drinking water, sanitary sewage disposal and protective disease immunizations, we accept public health as automatic. But it isn't automatic; it never has been or will be. Montana's public health benefits are based on cumulative efforts and require continued attention.

It can not be said that any one age has contributed more than another to the public health standards we enjoy today. The public health benefits we enjoy today are the product of more than 50 years of cumulative effort in Montana. What was done in 1922 is no less important than what will be done in 1953, because what



Dr. A. F. Longway 1901 - 1903



Dr. Thomas Tuttle 1903 - 1912





Dr. W. F. Cogswell 1912 - 1946



Dr. B. K. Kilbourne 1946 - 1950



Dr. G. D. Carlyle Thompson 1950

we are able to do tomorrow will be based on what was done yesterday.

So, since public health progress in this respect is cumulative, much of that achieved today must be credited to those who have worked to improve Montana's public health in the first 50 years.

To those little-known men and women who have contributed so much to the public health benefits we accept as automatic to-day, this 26th biennial report of the State Board of Health is dedicated. The progress and service recorded in this report is but a reflection of their contributions in the first 50 years of this Board of Health.

Montana's 7th Legislative Asembly created the State Board of Health with the passage of House Bill No. 104; Governor Joseph K. Toole signed the bill March 15, 1901.

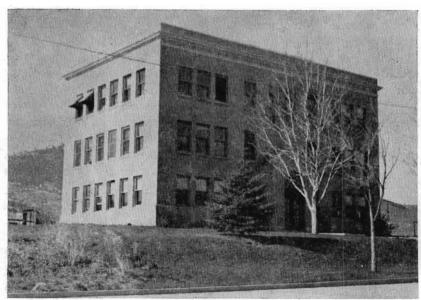
Less than a month after the creation of Montana's Board of Health, Governor Toole called Dr. A. F. Longeway of Great Falls, the Board's first secretary, to his office and said "You must do something about spotted fever, Dr. Longeway."

Esther Gaskins Price in "Fighting Spotted Fever in the Rockies" reports that the governor told Dr. Longeway of an appeal from the people of the Bitter Root Valley for help in the battle against Rocky Mountain spotted fever.

"The total appropriation with which Dr. Longeway had to work was two thousand dollars. Smallpox was rampant in many parts of the state; the whole two thousand could easily be spent in educating people to the necessity for vaccination. Typhoid was prevalent in many of the towns. There were badly contaminated water supplies from which whole towns drank, and slaughter houses that would turn the stomach of a cow."

The 1901 legislation that created the State Board of Health defined the Board's powers and duties as: the general care of the sanitary interests of the people of this state; to make inquiries and investigations of cause of disease; to adopt all needful rules and regulations, subject to the provisions of this act for the suppression of nuisances and the spread of disease; to inquire into the causes of mortality and the influence of locality, climate, employments, habits and other circumstances and conditions influencing the health of the people.

Montana's first Board of Health was composed of three physicians: Dr. William Treacy, Helena, president; Dr. James Belcher, Townsend; Dr. Hugo J. Loebinger, Butte; one civil engineer, James M. Robertson, Bozeman; Dr. Longeway as secretary; and the governor and state attorney general, James Donovan, as ex-officio members. Since its creation in 1901, the structure



FIRST BOARD OF HEALTH BUILDING—The 16th Montana legislature appropriated \$50,000 for the construction of this first Board of Health building just south of the capitol. Prior to the erection of this building the State Board of Health occupied two small rooms in the capitol building. This building now houses environmental sanitation, tuberculosis control, vital statistics and the Board's hygienic laboratory. The building was first occupied by the State Board of Health July 1, 1920.

of the State Board of Health has been reorganized four times: in 1907, 1919, 1943 and the last time in 1949. The present organization of the Board calls for three physicians, a dentist and three lay people as Board members.

County Boards of Health were required of every county in Montana under the 1901 legislation; these local Boards were and are designated to cope with the public health needs of the immediate vicinity.

Many people interested in public health recognized the importance of the work done by local Boards, but they received little more than infrequent tribute. Dr. Thomas Tuttle, who had succeeded Dr. Longeway as secretary to the state Board in the spring of 1903, wrote in 1904: "Your secretary made some investigations into the pay received by the various county health officers in the state. The results of these investigations . . . show very conclusively that a great many of them receive so little pay that we cannot expect very energetic work from them. However, some of those receiving very little pay are doing excellent work. There are some men who will stand by a contract regardless of the pay received."

(Continued on Page 149)



CENTRAL ADMINISTRATION

G. D. Carlyle Thompson, executive officer
 Elmer F. Newell, administrative officer*
 L. L. Benepe, registrar

During this biennium, a major reorganization of the staff of the State Board of Health was implemented. It began early in the biennium, and, in general, had been completed. The existing organization, as approved by the State Board of Health, is shown in Chart No. 1. Only the reorganization of the laboratory remains to be completed. All bacteriological and serological laboratory work is now performed in one unit and under a single direction. All chemical laboratory work has been moved to a single unit, but the professional and technical work in the field of food and drug and industrial hygiene chemistry still remain under the respective directors of those programs. The housekeeping services of the chemical laboratory, however, have been coordinated to avoid unnecessary duplication and to secure the greatest coordination between the workers.

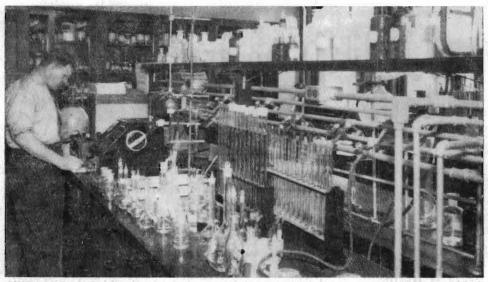
For comparative purposes, the organization of the State Board of Health, prior to this biennium, is shown in chart No. 2.

In general, the new organization brings together, in a single division, closely related functions requiring careful integration and utilization of staff. To accomplish this involved careful review of the duties of each position within the Board staff. While several positions have been combined, adjusted or eliminated, and the duties of the employees changed, no employee was left without an appropriate position and salary. Because of the resulting combinations of duties, more appropriate titles were established for such positions by the Board.

In this reorganization, no Board function or duty—established by the legislature—has been eliminated or changed in emphasis.

The Board considers the present organization fluid and subject to review and change as the need should arise. For example, in perfecting the organizational plan, several changes were made during the biennium.

^{*}Appointed Dec. 6, 1950.



CHEMICAL LABORATORY—During this biennium the Industrial Hygiene laboratory was combined with the food and drug chemistry laboratory to form a unified chemical laboratory (above). The chemists of these two programs work together cooperatively and supplement each other during periods of heavy demand by the two programs.

Office Space

In November, 1952, the Board had a major shift in office space arrangement. With the completion of the Mitchell Building, the State Board of Health was assigned two-thirds of the third floor of the new building. The Board of Health, at that time, was authorized to occupy the whole of the State Board of Health building, and to retain the space in the annex by the power house. The total space available to the Board, while less than the previously occupied, permitted more desirable office arrangements. All of the employees are officed in the three buildings in close proximity on the capital grounds. Prior to this move, Board employees were scattered from the Board of Health building, the Annex, and the capital building to quarters near the Helena airport.

Because of a large number of staff vacancies, the space has proved adequate but when all positions are filled, there will be a need for a small amount of additional space.

Perhaps of most significance was the granting of additional space to the bacteriological laboratory, where heretofore, bacteriologists and technicians were required to work under cramped conditions, which presented a definite occupational hazard. This has been eliminated.

Personnel

The biennium opened with a large number of staff vacancies, involving both key and subordinate positions. In May of 1950 the State Board of Health and the State Board of Examiners reached a general agreement on the sub-

ject of adequate salaries for Board staff members. On the basis of this agreement, a new job classification and compensation plan was put in effect September 15, 1950. This general agreement also served as the basis for initiating the Board reorganization on September 15, 1950.

A strong recruitment program was placed in operation with excellent results shown by the end of this biennium;

- (a) Division directors were recruited and appointed for the divisions of Child Health Services, Disease Control, Local Health Services, Public Health Nursing, and Environmental Sanitation.
- (b) The professional and technical staffs of the following divisions were completed: Public Health Nursing, Health Education, Environmental Sanitation, Local Health Services, Bacteriological Laboratory, Cerebral Palsy Center and Central Administration.
- (c) Staff vacancies were filled in this biennium with the appointment of: 3 full-time physicians, and one temporary part-time physician, 4 public health nurses, 4 health educators, 3 public health engineers, 2 sanitarians, 1 administrative officer and 2 physical therapists.
- (d) Staff turnover has been substantially reduced, but continues too high among laboratory workers, XI-ray technicians and clerical staff. The clerical turnover in 1950 was 55% and in 1951 was 74%. This compares with 98% in 1948 and 69% in 1949.
- (e) Vacanacies on the staff at the end of this biennium include: two positions in the division of Child Health Services (a physician and a medical social worker); three positions in the division of Disease Control (a physician-director and two industrial hygiene engineers); and one assistant director of the bacteriological laboratory.

Office Procedure



Through the position of Administrative Officer, established by the Board at the end of the last biennium, it has been possible to carry out studies of office procedures with a view of simplification, elimination of duplication, and a general adoption of more efficient methods and better service to the public. Following are some of the general items that have been reviewed and altered during the biennium.

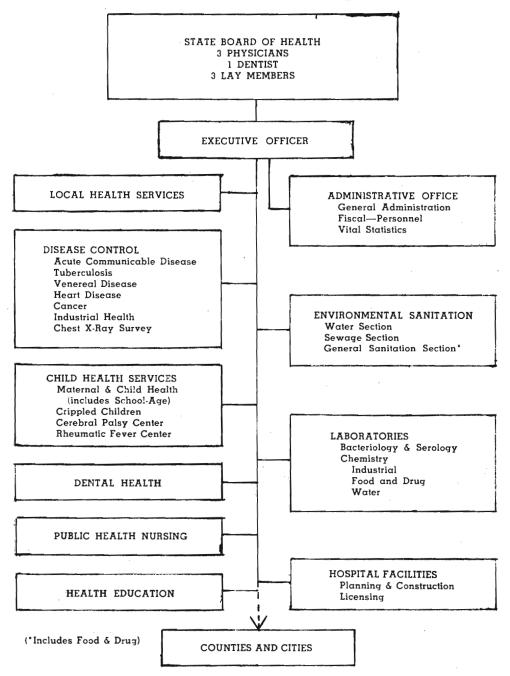
Early in this biennium, a central Board of Health telephone switchboard was established; this eliminated twelve separate trunk lines and telephone numbers previously used. The reception and dispatch of Board of Health mail was modified to a single address, replacing several post office box addresses for different divisions.

One person is now in charge of the mimeographing and multilithing for all of the divisions; this person is also responsible for the maintenance of the equipment.

CHART NO. 1

PRESENT ORGANIZATIONAL STRUCTURE

Montana State Board of Health



A Pitney-Bowles postage machine was acquired in this biennium; this has eliminated, very largely, the need for using postage stamps throughout the department.

With the helpful cooperation of the State Comptroller, a modern book-keeping and accounting system for all Board of Health accounts has been established. With the delivery of a new bookkeeping and accounting machine early in the next biennium, all accounts beginning July 1, 1952 will be handled with the new bookkeeping and accounting system.

Purchasing and Requisitioning

Purchasing of any item by Board of Health employees was discontinued in this biennium. It is now required that requisitions be prepared on all purchases. These requisitions, with appropriate justifications, must be transmitted to the Administrative Officer and Executive Officer for review and approval before being forwarded to the State Purchasing Agent.

Property Control

While property control methods have remained the same in this report period, the importance of property control has been emphasized to all staff members. In the next biennium, property control procedures will be carefully studied with a view to establishing more effective control measures.

Transportation

Board of Health staff members use privately-owned and state-owned cars for transportation on official business. A study of both systems of travel was undertaken in this biennium and will be continued in an effort to determine the suitablity of the use of state-owned or privately-owned cars. State-owned cars were assigned to divisions having extensive travel required in the performance of their duties; the responsibility for the cars was delegated to these division directors. Other State Board of Health cars are retained in a central car pool for employees and divisions having less frequent need for cars; these cars are assigned as requested for each trip.

Finances

Table No. 1 summarizes State Board of Health expenditures for each of the fiscal years in this biennium by major items; table No. 2 shows the State Board of Health expenditures in the biennium with relation to the fund sources: state, federal and private.

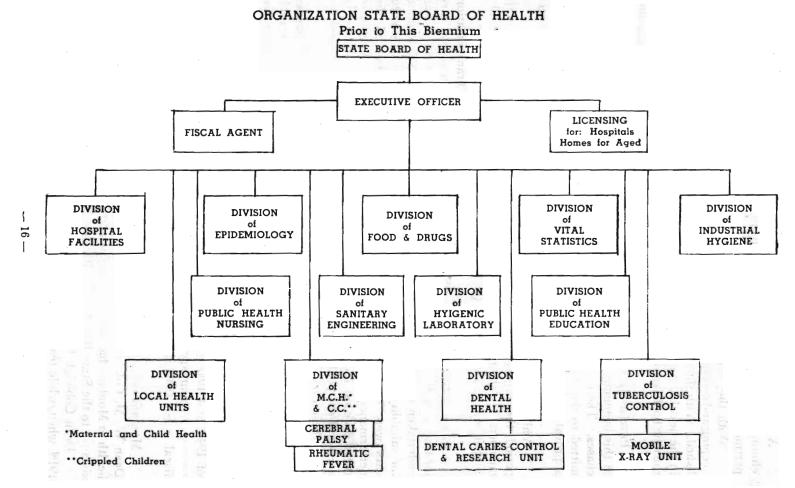
A summary review of budgets and expenditures, for the fiscal years of 1942, and 1947 through 1953, is presented in Table No. 3. Table No. 4 presents a summary of State Board of Health budgets and expenditures for fiscal years 1942, and 1947, through 1953, showing the fund sources.

Dean W. M. Cobleigh

Montanans lost an able and tireless public health servant with the death of Dean W. M. Cobleigh January 15, 1952. His work in the interest of public health in Montana has been of great benefit to the citizens of this state; his assistance to the State Board of Health since 1910 has been invaluable.

Dean Cobleigh began his association with the State Board of Health in 1910, when, while teaching chemistry at Montana State College, he conducted

CHART NO. 2



studies of the Yellowstone river for Dr. Thomas Tuttle, then secretary of the State Board of Health. From 1918 through 1922 he served as chemist and director of the Food & Drug Division; from 1923 to 1936 he was consultant to the Water & Sewage Division and the Food and Drug Division; from 1937 he served as consultant in the division of Sanitary Engineering, and upon his retirement from teaching and administrative work at Montana State College in 1943, he devoted practically all of his professional activities to assisting the division of Sanitary Engineering as consultant.

Montana Public Health Planning Council

During this biennium the Montana Health Planning Council (formerly Committee) continued to be of assistance to public health in Montana.

The Council, as outlined in its by-laws, "... seeks to promote the coordination of public health activities of public and private agencies in Montana; to serve as a forum for discussion of health problems, policies and plans; to secure the active support of the general membership of the member agencies of the Montana Health Planning Council and the public at large for the measures agreed upon..."

C. H. Fredrickson, M.D., Missoula, immediate past president of the Montana Medical Association, has been the president of the council since the resignation of Sheldon E. Davis, Ph.D., Dillon.

The following subjects were studied by the Health Planning Council in the past year:

- (1) Reorganization of the State Board of Health to permit the Board to alter its internal structure for increased efficiency, clarification of responsibility, and a better return on tax-dollars appropriated for health—without the Board assuming any authority or duties not already prescribed by law.
- (2) Clarification of existing legislation in the Enabling Act of 1945 to permit and encourage the development of county and multi-county health departments.
- (3) The state dental health program now in effect and the fluoridation of water, as endorsed by the Montana Dental Association.
- (4) The status of the Mental Health Program in Montana and the apparent need for improvement of conditions at Warm Springs and Boulder.
- (5) Industrial health in Montana as presented by Dr. R. B. Richardson of the Montana Medical Association.
 - (6) Stream pollution in respect to health.
- (7) Licensing laws in Montana pertaining to restaurants, refrigerated lockers, tourist courts, etc., as related to the protection of the people of the state and a means of increasing Montana's tourist traffic.
 - (8) Methods to improve and intensify the state-wide X-ray survey.

Through the discussion and support of the member organizations there will be a better understanding of the need for the proposed legislation. It is also anticipated that the active role assumed by the Health Planning Council members will materially improve citizen participation in the chest X-ray survey.

TABLE I Summary of State Board of Health Expenditures For Fiscal Years 1951 and 1952 State, Federal and Private

| | July 1, 1950 June 30, 1951 | July 1, 1951 June 30, 1952 | TOTAL |
|----------------------------|-------------------------------|-------------------------------|-----------------|
| Salaries | \$ 270,614.19 | \$ 336,253.27 | \$ 606,867.46 |
| Travel | 38,016.66 | 44,394.36 | 82,411.02 |
| P. E. R. S | 8,699.47 | 9,303.92 | 18,003.39 |
| Office Expense | 39,686.20 | 38,758.31 | 78,444.51 |
| Scientific Supplies | 18,331.68 | 16,989.20 | 35,320.88 |
| Merit System | 4,376.02 | 6,123.89 | 10,499.91 |
| Training | 9,956.67 | 4,438.65 | 14,395.32 |
| Drs. Fees, Clinics, X-rays | 31,775.61 | 30,598.87 | 62,374.48 |
| Hospital | 50,442.13 | 44,604.65 | 95,046.78 |
| Appliances | 3,448.66 | 5,781.44 | 9,230.10 |
| Miscellaneous | 1,676.64 | 1,160.82 | 2,837.46 |
| Aid to Counties | 58,529.88 | 45,826.93 | 104,356.81 |
| Sub-Total | 535,553.81 | 584,234.31 | 1,119,788.12 |
| Encumberance Adjustment | 23,659.65 | 19,114.44 | 42,774.09 |
| GRAND TOTAL | \$ 559,213.46 | \$ 603,348.75 | \$ 1,162,562.21 |

TABLE III MONTANA STATE BOARD OF HEALTH Summary of Budgets and Expenditures for Fiscal Years 1942 and 1947 — 1953 Inclusive By State and Federal Funds

| Year Code Total (1) (2) (3) | State (4) | Federal (5) | P. H. S. (6) | M. C. H. (7) | C. C. (8) |
|-----------------------------|--------------|-------------|--------------|-----------------|--------------|
| 1953 Bud (703,839) | (285,145) | (418,694) | (162,466) | (127,381) | (128,847) |
| 1952 Act 599,927 | 266,124 | 333,803 | 159,435 | 75,327 | 99,041 |
| Bud (699,739) | (282,645) | (417,553) | (184,929) | (114,905) | (117,719) |
| 1951 Act 557,387 | 278,919 | 278,468 | 137,963 | 71,965 | 68,540 |
| Bud (666,857) | (292,186) | (374,671) | (177, 137) | (107,703) | (89,831) |
| 1950 Act 491,182 | 220,702 | 270,480 | 126,907 | 70,919 | 72,654 |
| Bud (599,988) | (249,045) | (350,943) | (162,431) | (111,996) | (76,516) |
| 1949 Act 481,142 | 219,261 | 261,881 | 109,978 | 73,723 | 78,180 |
| Bud (553,731) | (232,682) | (321,051) | (136,005) | (92,280) | (92,766) |
| 1948 Act 441,353 | 163,399 | 277,954 | 122,593 | 71,571 | 83,790 |
| Bud (553,287) | (203,575) | (349,712) | (152,186) | (106,465) | (91,061) |
| 1947 Act 375,145 | 177,507 | 197,638 | 88,154 | 59,430 | 50,053 |
| Bud (472,746) | (203,402) | (269,344) | (128,999) | (83,253) | (57,092) |
| 1942 Act 296,606 | 104,745 | 191,861 | 91,999 | 61,670 | 38,192 |
| Bud (343,188) | (113,400) | (229,788) | (110,145) | (76,167) | (43,476) |

Note: Col. 5 is a total of Cols. 6, 7, and 8.
Col. 3 is a total of Cols. 4 and 5.
Code:

Bud.-Budgeted amount.

Act.—Actual expenditures.

P. H. S.—United States Public Health Service.

M. C. H.—United States Children's Bureau, Maternal and Child Health.

C. C. —United States Children's Bureau, Crippled Children.

TABLE II Statement of Expenditures for the Two Fiscal Years 1951 and 1952 by Source of Funds State, Federal and Private

| | | July 1, 1950 June 30, 1951 | 17,785,L 12, 495 C2 | | July 1, 1951 June 30, 1952 | ST THE PARTY OF |
|---|------------------------|---|--|--|--|--|
| ADMINISTRATION | 24,944.59 | \$ 30,209.13 26,412.82 3,796.31 | \$ 67,201.05 51,357.41 15,843.64 | \$ 39,247.98 25,411.73 13,836.25 | \$ 40,650.74 37,035.51 3,615.23 | Total 79,898.72 62,447.24 17,451.48 |
| MERIT SYSTEMTRAINING | | 4,376.02 9.956.67 | 4,376.02 9,956.67 | | 6,123.89 4,438.65 | 6,123.89 4,438.65 |
| DISEASE CONTROL | 46,437.73 14,095.46 | 25,448.20 12,128.26 13,319.94 | 71,885.93 26,223.72 45,662.21 | 40,572.75 21,493.48 19,079.27 | 39,167.50 13,949.42 25,218.08 | 79,740.25 35,442.90 44,297.35 |
| CHILD HEALTH SERVICES | 64,371.33 11,803.31 | 73,656.03 19.00 7,610.24 46.934.26 | 138,027.36 11,822.31 7,610.24 99,502.28 | 46,067.90 7,927.64 38.140.26 | 110,898.91 9,029.90 7,813.50 69,559.87 | 156,966.81 16,957.54 7,813.50 107,700.13 |
| Cerebral PalsyPUBLIC HEALTH NURSING | | 19,092.53 21,946.10 | 19,092.53 26,752.69 | 7,031.35 | 24,495.64 9,833.08 | 24,495.64 16,864.43 |
| HEALTH EDUCATIONGeneralNarcotics | 1,165.79 | 18,586.22 18,586.22 | 26,194.52 ¹ 19,752.01 6,442.51 ¹ | 5,659.22 254.56 5,404.66 | 20,367.01 20,367.01 | 27,281.96 ² 20,621.59 6,660.39 ² |
| ENVIRONMENTAL SANITATION | , | 15,767.36 | 43,174.53 | 38,758.91 | 23,757.55 | 62,516.46 |
| BACTERIOLOGICAL LABORATORY HOSPITAL FACILITIES | 15,663.59 | 24,874.63 1,448.16 | 55,549.04 17,111.75 | 26,379.53 16,585.19 | 26,986.18 3,297.15 | 53,365.71 19,882.34 |
| DENTAL HEALTHLOCAL HEALTH SERVICES | 10,246.58 | 2,915.03 3,632.76 | 13,161.61 3,632.76 | 10,370.15 10,346.36 | 3,783.63 4,661.99 | 15,064.13 ³ 15,008.35 |
| Sub-Totals | 36,538.09 18,326.05 | 232,816.31 21,991.79 10,070.55 11,921.24 | 277,023.93 ¹ 58,529.88 28,396.60 30,133.28 | 242,275:07 25,104.28 18,083.69 7,020.59 | 293,966.28 20,722.65 10,995.08 9,727.57 | 538,407.38 ² ³ 45,826.93 29,078.77 16,748.16 |
| Unorganized Counties Sub-Totals ENCUMBRANCE ADJUSTMEENT | 278,919.02 | 254,808.10 23,659.65 | 535,553.81 ¹ 23,659.65 | 267,379.35 | 314,688.93 19,114.44 | 584,234.31 ² ³ 19,114.44 |
| GRAND TOTAL | \$278,919.02 | \$278,467.75 | \$559,213.461 | \$267,379.35 | \$333,803.37 | \$603,348.75 ² ³ |

¹ Total includes \$1,826.69 private funds. ² Total includes \$1,255.68 private funds. ³ Total includes \$910.35 private funds.

TABLE IV MONTANA STATE BOARD OF HEALTH

Summary of Budgets and Expenditures for Fiscal Years 1942, and 1947, to 1953, inclusive

And Showing Sources of Funds as Indicated by Column Headings

| Year (I) | Code (2) | Total Federal (3) | General (4) | Hospital (5) | W. P. (6) | V. D. (7) | T. B. (8) | Cancer (9) | Cancer Special (10) | Heart (11) | MCH-A (12) | MCH-B (13) | CC-A (14) | CC-B (15) |
|-------------|-------------|-------------------------|----------------|--------------|--------------|--------------|-----------|---------------|---------------------------|---------------|---------------|---------------|--------------|--------------|
| 1953 | Ja. Ti | 1,500 | 1 | | | | = 60 | | | | | ander. | 7.575799997 | PART SHOW |
| | Bud. | (418,694) | (67,500) | (1,900) | (7,000) | (17,300) | (21,800) | (16,300) | (17,966) | (12,700) | (87,381) | (40,000) | (78,847) | (50,000) |
| 1952 | Act. | 321,849 | 70,812 | 3,297 | 7,262 | 18,030 | 23,863 | 16,271 | | 11,792 | 46,155 | 27,472 | 38,947 | 57,948 |
| | Bud. | (417,553) | (79,891) | (5,202) | (14,302) | (19,072) | (30,806) | (18,412) | | (17,244) | (85,358) | (29,547) | (57,120) | (60,599) |
| 1951 | Act. | 278,468 | 64,965 | 1,448 | 5,217 | 19,347 | 18,510 | 20,995 | | 7,480 | 47,145 | 24,820 | 22,683 | 45,856 |
| | Bud. | (374,671) | (74,152) | (4,500) | (11,019) | (20,388) | (25,452) | (22,757) | | (18,868) | (80,805) | (26,898) | (37,990) | (51,841) |
| 1950 | Act. | 270,480 | 61,024 | 3,027 | 7,700 | 25,471 | 20,779 | 5,821 | | 3,085 | 47,744 | 23,175 | 38,443 | 34,211 |
| | Bud. | (350,943) | (69,162) | (3,000) | (9,619) | (27,083) | (21,678) | (18,466) | | (13,423) | (88,820) | (23,176) | (38,866) | (37,650) |
| 1949 | Act. | 261,881 | 56,563 | 7 | | 29,583 | 20,613 | 6,211 | | | 53,468 | 20,255 | 40,888 | 37,292 |
| | Bud. | (321,051) | (65,396) | (3,240) | | (30,280) | (23,230) | (13,859) | | | (65,172) | (27,108) | (41,964) | (50.802) |
| 1948 | Act. | 277,954 | 53,666 | 315 | | 28,632 | 34,643 | 5,336 | | | 41,451 | 30,120 | 42,024 | 41,766 |
| 12 | Bud. | (349,712) | (64,479) | (7,500) | | (30,343) | (36,577) | (13,287) | | | (67,207) | (39,258) | (42,058) | (49,003) |
| 1947 | Act. | 197,638 | 47,446 | 4,798 | | 18,858 | 13,819 | 3,233 | | | 32,110 | 27,320 | 29,956 | 20,097 |
| | Bud. | (269,344) | (58,627) | (5,545) | | (29,488) | (21,819) | (13,520) | | | (33,595) | (49,658) | (30,000) | (27,092) |
| 1942 | Act. | 191,861 | 74,928 | | | 17,071 | | | | | 35,197 | 26,473 | 32,047 | 6,145 |
| | Bud. | (229,788) | (88,403) | | | (19,835) | | | | | (38,709) | (37,458) | (37,331) | (6,145) |

Note: Column 4 through 11 are United States Public Health Service Funds; Column 12 through 15 are United States Children's Bureau Funds,

Bud,-Budgeted amount.

Act.-Actual expenditures. T. B .- Tuberculosis.

W. P.-Water pollution.

V. D .-- Veneral disease.

MCH-A-Maternal and child health, Fund A.

MCH-B-Maternal and child health, Fund B.

CC-A-Crippled children, Fund A.

CC-B-Crippled children, Fund B.

Hospital-Administration of hospital construction.

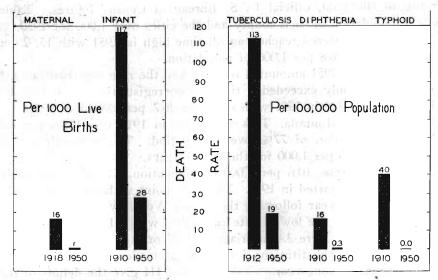
Unused portions of budgeted funds in columns 4, 7, 8, 9, 11, 13 and 15 lapse at end of each year (June 30) and are lost to the state.

No allotments of funds in Column 5 have been made since 1947; these funds, not subject to lapsing, have been extended so far as possible.

No federal appropriation was made for 1953 for the funds in Column 6; these funds are not subject to lapsing, the budgeted 1953 funds being carried over from 1951 and 1952 allotments.

Column 10 represents a research grant for one year, with a possibility of a similar grant for a second year.

Funds in Columns 12 and 14 lapse after the 3rd year following allotment; since July of 1952 it has been required that these Federal funds be paid to the state treasury before the end of the year of allotment. These funds require dollar-for-dollar matching by the state. The quarterly payments to the state are controlled by the rate of expenditure in the state. When Congress amended the Federal Act in 1952, Montana lost \$83,000 in U. S. Children's Bureau Funds because of inability to utilize them and have them paid into the state treasury before the federal legislation was changed. The basic grant in 1953 for Column 12 is \$64,597 and for Column 14 is \$61,272.



MONTANA DEATH RATES—A comparison of the 1950 rate for maternal and infant deaths and deaths from tuberculosis, diptheria and typhoid with the highest rates ever recorded in Montana in each classification are given above.

VITAL STATISTICS



L. L. Benepe, state registrar

Summary

June 1, 1952, marked the 46th anniversary of the creation of Montana's Bureau of Vital Statistics. This bureau was established for central registration of births and deaths. State legislation in 1943 repealed the original act and re-enacted the present law which includes central registration not only for births and deaths, but still-births, marriages, divorces, annulments, adoptions, legitimations, and provides for the recording of delayed records (those six months or more subsequent to the event).

At the present time there are more than 850,000 records indexed and filed in a fire proof vault in the State Board of Health building: births 474,187; deaths 242,588; marriages 68,445; divorces 18,530; and delayed births 46,535. Grand total: 850,285.

When the 1949-1950 biennial report was compiled, only the preliminary figures of the 1950 federal census were available. The population of Montana increased by 31.568 from 559,456 in 1940 to 591,024 in 1950, or 5.6%

according to the final, official U. S. Bureau of Census figures. Table I shows the population of each county and the cities over 1,000 for 1950.

The births registered reached an all time high in 1951 with 15,929, and the birth rate was 26.8 per 1,000 of population.

The deaths for 1951 amounted to 5,964 and the rate was 10.0 per 1,000, this number was only exceeded 5 times since registration started in 1910. The infant deaths, 425 in 1951 with a rate of 26.7 per 1,000 live births, was an all time low in Montana. This same rate in 1910 was 116.6 per 1,000 live births, a reduction of 77% over the period. The stillbirth rate has hovered around 15.0 per 1,000 for the past 5 years.

The marriage rate, 10.6 per 1,000 of population, was the lowest since central registration started in 1943. The high point with a rate of 24.9 was reached in 1946, the year following the end of World War II.

Divorces showed the lowest rate since 1943 with 3.1 per 1,000 of population. In 1951 there were 3.4 marriages per divorce.

There were 491 substitutions for adoptions made in 1951, the greatest number ever made in one year. (Tables II and III give the details of these events by counties for 1950 and 1951).

Montana's population, by races, as recorded in the 1950 census:

| Race | Number | Percentage of State Population |
|--------|---------|--------------------------------|
| White | 572,038 | 96.8% |
| Indian | 16,606 | 2.8 |
| Negro | 1,232 | 0.2 |
| Yellow | 733 | 0.1 |
| Other | 415 | 0.1 |

There are seventy-five local registrars in the state: one at each county seat and additional ones located at strategic points, other than county seats, for the convenience of those who must report vital events.

New Program Plans

Beginning in 1953, IBM tabulation machinery will be installed. With this equipment the present hand tabulation and indexing will be discontinued. It will make possible a more complete and exact analysis of all statistical material. The tabulating equipment will be used for all of the State Board of Health's statistical services, including communicable disease reporting in the Disease Control Division. In addition it is hoped that photostatic equipment can be installed during the year to handle birth notifications, interchange non-resident certificates, requests for full certified copies of records and other copy work which at the present time is copied on typewriters. These two procedures will permit better use of personnel and give an improved service to the public.

Program Developments The national office of Vital Statistics in cooperation with the Federal Census Bureau, conducted a survey on the completeness of birth registration in the nation in conjunction with the 1950 census. The enumerators made special birth cards for all babies born



CLAIM TO CITIZENSHIP—The child's birth certificate stands behind him as his certificate of citizenship. Birth registration in Montana has improved from 96.7% in 1940 to 99.5% in 1950; the national average for birth registrations in 1950 was 97.8% of the babies born.

between January 1, 1950, and March 30, 1950. These cards were checked against the birth transcripts furnished to the National Office of Vital Statistics by the states. The unmatched records were sent to the states for further checking. In Montana, 3,387 birth cards were enumerated for the period; birth certificates were on file in this bureau for all but 17 of these birth cards. This gave Montana a 99.5% record for completeness of birth registration. The national average, in 1950, was 97.8% of all births registered. Only seven properly

states had better reporting records than Montana: Connecticut, 100%; Rhode Island and Minnesota, 99.9%; Massachusetts and New Hampshire, 99.7%; Nebraska and Wisconsin with 99.6%.

A similar test in 1940 gave Montana a 96.7% birth registration record as compared to the national average of 92.5%. At that time, 45 Montana counties showed 100% registration average; physicians, hospitals and local registrars in these counties are due the major share of the credit for this excellent record. The only counties that did not show 100% birth registration in 1940 were Big Horn, Blaine, Flathead, Lake, Missoula, Ravalli, Roosevelt, Sheridan, Silver Bow, Stillwater and Yellowstone.

On the tenth of each month this bureau starts processing records received from the field. Birth, death, stillborn, marriage and divorce reports are segregated, dated and indexed. Birth notifications are sent to the parents of all babies registered, except in the cases of illegitimate births and cases where the baby dies shortly after birth. All of the deaths reported to this bureau are coded in accordance with the sixth revision of the International Causes of Death. Records for each biennium are permanently indexed.

There were 458 adoption records substituted in 1950, and 491 in 1951. A substitute record containing the statistical information of the foster parents is filled in place of the original birth certificate. The original birth certificate together with the order of adoption and the county clerk's and local registrar's duplicate and triplicate records are sealed in a file to be opened only on a court order or upon the request of the individual (if over twenty-one years of age).

Requests for corrections, information and verification required more research work in this bureau than in previous bienniums. In 1950, 15,028

requests were answered; in 1951 the number increased to 17,188 as compared to 12,750 per year in the previous two-year period. No fee is charged federal and state agencies for verification of records; by statute, free certified copies of records are issued to the Veterans Administration or its representatives. A fee of 50 cents an hour is charged for searching the files for information for individuals. Certified copies issued by this bureau in this report period were:

8

3

| | 1950 | 1951 |
|-------------------------------|--------|---------|
| Birth certificates (paid) | 3,621 | 5,294 |
| Birth certificates (free) | 898* | 733** |
| Death certificates (paid) | 307 | 277 |
| Death certificates (free) | 146*** | 125**** |
| Total certified copies issued | 4,972 | 6,469 |

(*includes the re-issue of 86 birth certificates; **includes the re-issue of 91 birth certificates; ***includes the re-issue of 2 death certificates; ****includes the re-issue of one death certificate).

In 1950, this bureau collected \$3,951.75 in fees for the certificates tabulated above; in 1951, these fees amounted to \$5,601.25. These totals include \$23.25 in delay filing fees for 1950 and \$30.25 in delay filing fees in 1951.

Statistical information is furnished to the National Office of Vital Statistics, to the various divisions of the State Board of Health, and other Montana groups such as the Department of Public Welfare, the Montana Tuberculosis Association and the American Cancer Society, Montana Branch.

Montana's ten leading causes of death in 1950 and 1951 were the same, but the seventh, eighth and ninth ranking causes shifted in order of importance (see Tables IV and VII). In 1950, tuberculosis was the seventh ranking cause of death in Montana; in 1951 it was ninth. Arteriosclerosis was the eighth ranking cause of death in Montana in 1950 and moved to seventh in 1951. Nephritis was ninth in 1950 and eighth in 1951.

The first six causes—heart, cancer, apoplexy, accidents, early infancy and pneumonia—have been in exactly that order of importance for the past three years. These ten conditions were responsible for 80.5% of the total deaths in 1950 and 82.3% in 1951. In other words, four out of every five deaths recorded in the state in this report period were due to one of the ten leading causes. Every third death was a heart condition; every eighth death was due to cancer; every tenth death to apoplexy; and accidents caused every twelfth death in Montana in each of the two years.

Diarrhea and enteritis and typhoid fever, it will be noticed, have dropped out of the top-ten picture. Arteriosclerosis and diabetes have replaced them. The order of importance has shown a marked change since 1910, except for Early Infancy deaths which continue to hold fifth place.

The principal causes of death in Montana, and rates per 100,000 population are tabulated here for this report period:

| • | ^ | * | ^ |
|---|---|---|---|
| 1 | 9 | э | U |

| l'and | was recorded in 1951. In a | 1950 | or location of Aims |
|-------|----------------------------|-------|---------------------|
| | in Montana. | | Rate Per 100,000 |
| | Cause | NT | Population |
| 1. | Heart | 1057 | 333.1 |
| 2. | Cancer | / 1 1 | 124.0 |
| 3. | Apoplexy | 619 | 104.7 |
| 4. | Accidents | 545 | 92.2 |
| 5. | Early Infancy | 321 | 54.3 |
| 6. | Pneumonia | 157 | 26.6 |
| | Tuberculosis | 114 | 19.3 |
| 8. | Arteriosclerosis | 108 | 18.3 |
| 9. | Nephritis | 80 | 13.5 |
| 10. | Diabetes | 49 | 8.3 |

1951

| | | LANGE TO A STATE OF THE PARTY O | Rate Per 100,000 |
|-----|------------------|--|------------------|
| | Cause | Number | Population |
| 1. | Heart | 2159 | 363.4 |
| 2. | Cancer | 802 | 135.0 |
| 3. | Apoplexy | 618 | 104.0 |
| 4. | Accidents | 525 | 88.4 |
| 5. | Early Infancy | 350 | 58.9 |
| 6. | Pneumonia | 121 | 20.4 |
| 7. | Arteriosclerosis | 119 | 20.0 |
| 8. | Nephritis | 85 | 14.3 |
| 9. | Tuberculosis | 73 | 12.3 |
| 10. | Diabetes | 58 | 9.8 |

1910

| | 14 | Transport and Elec- | | Rate Per 100,000 |
|-----|--|------------------------|------|------------------|
| | Cause | | | Population |
| 1. | Accident | f fide f sas like | 211 | 135.9 |
| 2. | Tuberculosis | | 0.10 | 89.9 |
| 3. | Pneumonia . | e signe and of | | 74.6 |
| 4. | Heart | | | 67.9 |
| 5. | Early Infanc | y and and to M | | 65.7 |
| 6. | Diarrhea and | Enteritis | 226 | 60.1 |
| | Nephritis | the in 1881 in said | 222 | 58.7 |
| -8. | CHILLET | | 10, | 41.5 |
| 9. | The Part of the Pa | scripple, salt, in the | *** | 39.9 |
| 10. | Apoplexy | | | 29.6 |
| | | | | |

There has been an increase in Montana each year in the number of births reported since 1945. (See Tables VII and II). In 1950, the monthly average was 1,299; in 1951, it was up to 1,327 a month. A record high for births in Montana in one calendar year was recorded in 1951. In that year, this bureau recorded 15,929 births in Montana.



During 1950, there were 15,395 births in Montana; in that year, 194 of the births in the state were to non-resident mothers and 391 Montana mothers were confined in other states. For 1951, 15,636 births were recorded in Montana; of these 162 were to non-resident mothers, and 455 Montana mothers were delivered of children in other states. The greatest interchange of resident and non-resident births for the biennium

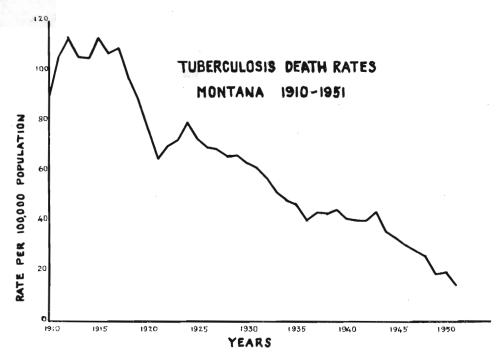
was with the immediately adjacent states: the Dakotas, Wyoming, Idaho and Washington. The migratory farm laborers from Texas accounted for most of the non-resident births from that state.

The birth rate for 1950 in Montana was 26.14; for 1951 it was 26.8. By races, the white birth rate was 25.8 and 25.3 (including Mexicans). The Indian birth rates were nearly twice that of the white; the Negro birth rates were practically one-half of the white. The birth rates of the yellow races were comparable to the white; while the birth rates of the brown races were extremely low.

The illegitimate birth rate in the state averaged 20.3 per 1,000 live births, or slightly over 2 per cent of the total. The stillborn ratios in Montana were 14.9 and 15.6 per 1,000 live births for 1950 and 1951 respectively. This bureau's records show that twins occurred once in every 896 births in 1950 and once in every 926 births in 1951. No triplets were reported in 1950; two sets were born in 1951; or once in every 7,965 births.

Deaths reported to this bureau, in 1950, averaged 485 a month; in 1951 this average was 497 a month. In both years, the greatest number of deaths were recorded in March; the smallest number of deaths was recorded in August of 1950 and in September of 1951 (see Table VIa). Of the 5,791 deaths that occurred in Montana in 1950, 240 were non-residents. In the same year, 266 Montana residents died in other states. Of the 5,906 deaths recorded in Montana in 1951, 227 were non-residents; in this year 285 Montanans died in other states. Deaths in Montana, classified by sex, show that there were 175 male deaths for every 100 female deaths in 1950 and 176 male deaths to every 100 female deaths in 1951 (see Table IVc). More than two-fifths of the deaths recorded in this report period involved married persons; a little more than one-fourth of the deaths involved widowed persons; less than one-fourth of the total were single; 4.4% were divorced and the marital status of 2.0% was unknown (see Table IVc).

By races, the whites constituted 95 per cent of all deaths reported; the Indians 4.0 per cent; Negro, brown and yellow races make up the other 1.0 per cent (see Table IVc).



The 5,964 deaths reported in 1951 is the greatest number of deaths ever reported in Montana; only once before, in 1939, has the number of deaths in this state exceded 5,900.

In Montana there has been a decline in the number of marriages since the 1946 high. June continues to be the month of marriages in this state with August second and September a close third (see Table VId).

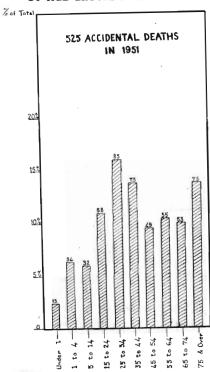
More than two-thirds of the marriages in this report period were religious ceremonies; more than one-fourth of the marriages were performed by civil rites and three per cent of the marriages were by declaration. White marriages were responsible for 98% of the state total while the other 2 per cent were scattered among the Indian, Mexican, Negro, yellow and brown, in that order.

Residents from every state of the nation, Hawaii, Alaska, and Peurto Rico were married in Montana each year. Foreign countries represented in the marriage records of this bureau in this biennium were Morocco, South Africa, Guatemala, England and Okinowa. Marriage records show that every fifth groom and every sixth bride, married in Montana in this biennium, were non-residents.

The record of previous marital status reveals that three out of four grooms were single as compared to two out of three brides; one in every five grooms was divorced and one in four of the brides had been divorced; only one percent of the grooms were widowed as compared to seven percent of the brides.

As with marriages in Montana, there has been a continuous decline each year since 1946 in the number of divorces granted. In 1946 an average of 268 divorces were granted in Montana each month; in 1951 this monthly average had dropped to 153 (see Table IVe).

ACCIDENTAL DEATHS BY AGE GROUPS IN MONTANA



Cruelty was, in 1951 and 1950, the greatest causes for divorce, followed by desertion, neglect, annulment, felony, intemperance and adultery in that order of frequency. In 1950, 965 minor children were involved in the divorces recorded by this bureau; in 1951, there were 959 minor children involved in divorces granted in Montana. The majority of minor children effected by divorces in this state are from one-child families; divorce records show that in Montana there are fewer divorces as the size of the family grows.

Montana's divorce-marriage ratio was 371 marriages to 100 divorces in 1950 and 343 marriages to 100 divorces in 1951. Stated another way, there were 3.7 marriages per divorce in 1950 and 3.4 marriages per divorce in 1951.

For a more detailed breakdown of the information recorded by the Bureau of Vital Statistics, residents of

Montana are invited to write the Bureau of Vital Statistics, State Board of Health, Helena, Montana.

The staff of the Bureau of Vital Statistics realizes that any degree of success this bureau is able to achieve is traceable to the work of those in the local areas who have helped in preparing the records and have promptly reported vital information to this office. This applies, especially, to the physicians, hospitals, morticians, coroners and clergymen who report these events.

Significant Problems The searching of the records for the issuing of verifications, corrections, the sustitutions for adoptions, and the delayed birth registration work continues to increase. In 1950 the records were searched 15,028 times and in 1951 the work increased to 17,188 times compared to 12,750 searches yearly in the previous biennium, an increase of 17.9% in 1950 over 1949, and an increase of 14.1% in 1951 over 1950.

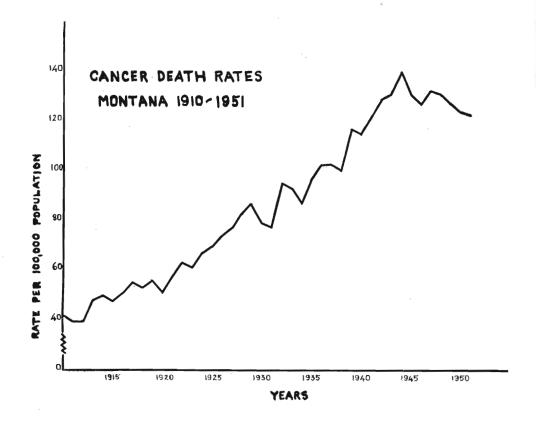
VOLUME OF VITAL STATISTICS WORK

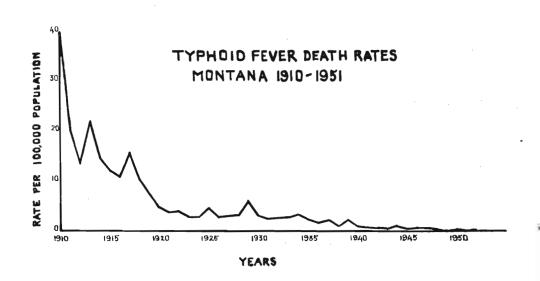
(with same size staff: four)

| The Contract of the Contract o | 1947 | 1951 | % of Change |
|--|--------|--------|-------------|
| Birth Certificates Issued | 3,374 | 6,027 | +79% |
| Death Certificates Issued | 461 | 402 | -12% |
| Times Records Searched | 11,768 | 17,188 | +46% |
| (for issuing verifications, corrections, substitutions for adoptions, delayed birth registrations.) | | | |

Leading Causes of Accidental Deaths

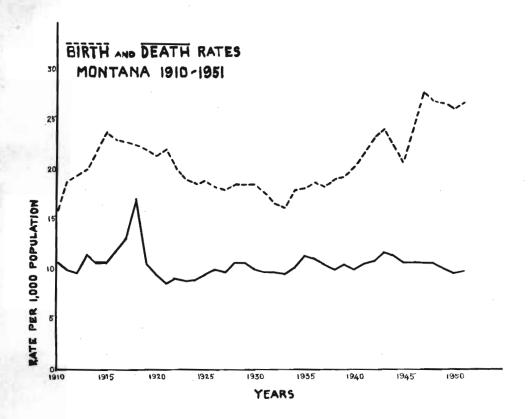
| 1910 514 ACCIDENTAL DEATHS | | | 1951 525 ACCIDENTAL DEATHS | | |
|---|--------|----------|-------------------------------|--------|-------|
| , n | DEATHS | PER CENT | | DEATHS | |
| RAILWAYS | 131 | 25.4% | AUTO ACCIDENTS | 180 | 34 % |
| MINE ACCIDENTS | 78 | 15.1% | FALLS | 88 | 16.9% |
| DROWNINGS | 49 | 9.5% | FIRE & EXPLOSIVES | 42 | 8 % |
| OTHER VEHICLES | 34 | 6.6% | FIREARMS | 25 | 4.7% |
| FIREARMS | 33 | 6.4% | DROWNINGS | 25 | 4.7% |
| FALLS | 32 | 6.2% | RAILWAYS | 21 | 4 % |
| BURNS | 20 | 3.8% | MACHINERY | 20 | 3.8% |
| POISONI NG | 13 | 2.5% | AIRCRAFT ACCIDENT | S 14 | 2.6% |
| ELECTRICAL SHOCKS | 10 | 1.9% | VATER TRANSPORTATIO | ON 14 | 2.6/ |
| MACHINERY | 9 | 1.7% | GAS & YAPOR POISON | NG 11 | 2% |
| AUTO | 5 . | ·9% | | | |
| ACCIDENTAL DEATHS FROM OTHER GAUSES; NO OTHER | | | ACCIDENTAL DEATHS | FROM | |





A back log now exists due to the fact that the volume of increased work cannot be handled with the same staff as two years ago. This condition has periodically occurred throughout the biennial and has required the temporary assignment of additional clerical staff for two to three-month periods. There is an immediate need of addition to the staff in the Bureau of Vital Statistics.

The detailed Vital Statistics Tables (numbers I, II, III, IV, V, VI, VIa, VIb, VIc, VId, VIe, VII) will be found in the appendix section of this report.





WHERE EXAMINATIONS ARE PERFORMED—Pictured above is a section of the Montana State Board of Health Bacteriological Laboratory where 252,998 examinations were completed on a total of 119,571 specimens received in the 1950-52 biennium.

BACTERIOLOGICAL LABORATORY

Edith Kuhns, director

Summary



A total of 252,998 examinations were completed on a total of 119,571 specimens received during the biennial period 1950-52. A review of this work has been outlined in detail in Table II and briefly summarized in Table I. Shipment of containers dispensed during this time is shown in Table III.

Developments within the present program, projected plans, significant problems and related activities are presented for consideration.

New Proposed Plans

A. Amplify present program

- 1. Diagnostic procedures
 - (a) Syphilis Serology
 - (1) Increase the number of supplementary tests run on controversial sera.
 - (2) Maintain closer follow-up of controversial serologic findings with physicians.

- (3) Replace Standard Kahn Test with VDRL Cardiolipin Test.
- (b) Bacteriological Procedures
 - (1) Tuberculosis
 - (a) Use of two types of culture media instead of one.
 - (b) Determination of Streptomysin Sensitivity of isolated strains if requests warrant this service.
 - (2) Antibiotic Sensitivity Tests—to be run upon organisms isolated from various body fluids, if indicated.
 - (3) Brucellosis—more emphasis to be placed upon follow-up cultures of cases having positive titers.
 - (4) Addition of Weil-Felix and complement-fixation tests for viral and rickettsial infections to implement febrile tests now run.
 - (5) Streptolysin titers to be run upon request, on selected bloods, as a diagnostic aid in suspected rheumatic fever cases.

B. Training

- 1. Refresher courses offered at the Communicable Disease Center of the U. S. Public Health Service to be utilized as suitable personnel and funds permit, in Diagnostic Methods in the field of enteric bacteriology, general bacteriology, parasitology and mycology.
- 2. Intensive training courses in Diagnostic Methods in Communicable Disease to be offered to hospital and clinic laboratory technicians in enteric diseases, respiratory diseases and bacteriology of body fluids. Both the State University and State College Bacteriology Departments have signified their willingness to assist in any way possible in presenting such courses.
- 3. Intensive in-service staff training.

C. Approval of Laboratories for Syphilis Serology

- 1. Establish definite policies for standards governing approval of clinic, hospital and private laboratories for the performance of serologic tests for syphilis. Qualifications of personnel and standards of physical equipment to be outlined and set forth.
- 2. Provision to be made for submission of evaluation specimens and consultant services to those laboratories requesting approval.

D. Revision of Laboratory Forms

- 1. History forms and reporting forms to be revised to facilitate more rapid and accurate reporting.
- E. Development of Closer Working Relations with Clinical Pathologists in Local Laboratories.

F. Remodeling of Present Quarters

- 1. To provide additional working space for the bacteriological water analysis.
- 2. To provide central washroom facilities.



Fulfillment of all or any part of these proposed plans will depend largely upon the availability of adequately trained personnel, particularily the recruitment of a Bacteriologist III, who could serve as assistant director, capable of guiding the technical routine work, thus releasing the director for the planning and carrying out of the administrative work of the laboratory. At the present time it is necessary for the director to spend 75% to 95% of the time assisting with the routine diagnostic work and in

training new personnel.

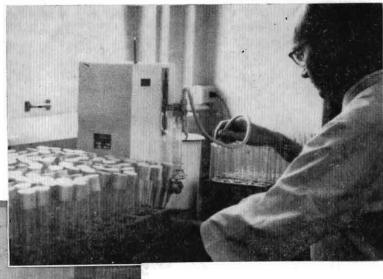
It is to be recommended that one full-time technician and a full-time typist be added to the present staff.

If demand warranted the service, it might be advisable to augment our present febrile agglutination tests with the Weil-Felix test and complement-fixation tests for rickettsial and viral infections.

It is anticipated that the activities of the intensified X-ray survey program will result in an increased number of specimens submitted for follow-up purposes upon selected cases. Any material increase over the number of samples now processed will necessitate the employment of an additional bacteriologist to care for the additional microscopical and cultural work involved. An additional centrifuge and a separate cubicle for tuberculosis work, to protect the workers from possible infection, are highly desirable.

Program Development A study of the comparative figures for the biennial period 1948-50 and the biennium 1950-52 shows a decrease in the total number of examinations performed. The decrease, as may be noted in Table I, occurred chiefly in the total number of specimens submitted for syphilis serology. Decreases were noted also in the field of gonorrhea, diphtheria, parasitic diseases and enteric agglutinations. Increases were noted in examinations for brucellosis, tularemia, tuberculosis and miscellaneous types.

The decline in blood specimens submitted for syphilis may lie in part with the increased number of premarital blood tests run in private, hospital,





BLOOD AND WATER TESTING—The bacteriologist above is operating a new pipetting machine used in the Bacteriological Laboratory to fill test tubes with culture media used in examining water samples sent to the laboratory for bacteria studies. The lab performed 4,132 water examinations in this biennium. The serologist pictured at the left is pippeting serum for Kolmer-Wasserman tests on blood specimens for syphilis. In this biennium, the lab performed 200,988 examinations on 101,403 blood specimens submitted for examination for syphilis.

Ñ.

and clinic laboratories, of which nineteen are approved for this service, at the present time.

The decline in some of the other fields may be attributed to the extensive use of drug and antibiotic therapy and subsequent indifference of the physician to possible bacterial incitants. The state also has been comparatively free from any outbreak of diseases requiring laboratory diagnostic services.

Review of the technical procedures employed by the water bacteriology, general bacteriology and serology sections of the laboratory were made by a team of consultants from the Communicable Disease Center and Veneral Disease Research Laboratories of the U. S. Public Health Service.

Recommendations made by these consultants will be taken under consideration for adoption as conditions permit. Outstanding among them was the need for additional working space for the bacteriological analysis of water, a separate cubicle for Tuberculosis work and central washroom facilities. Staff training in refresher courses was recommended for appropriate staff members in the field of enteric bacteriology, general bacteriology, parasitology and mycology.

Working facilities have been considerably improved by the assignment of two extra rooms to the laboratory, one to serve as an office for the director, one to serve as a serology laboratory, thus relieving us of the necessity of conducting both the bacteriological & serological work in one room.

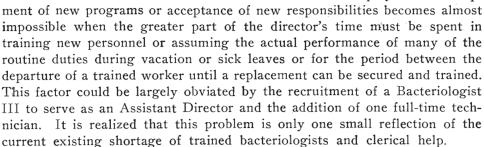
Painting and cleaning of the entire laboratory space, with the exception of the animal quarters has effected a marked improvement in working conditions.

The addition of two new 37 degree C water baths to the serology section and a new steel storage cabinet and long carriage typewriter to the office, has been made.

Responsibility for all bacteriological work related to the Environmental Sanitation Division has been assigned to the laboratory.

Significant Problems

The continued turnover in both the professional and clerical staff constitutes the most serious problem of the laboratory in maintaining a continuity even of the routine work, technical and clerical. Maintenance of accurate records is nearly impossible when it becomes necessary to place compilation of medical records in the hands of clerks unfamiliar with even the technical terms employed. Develop-



Related Activities

Under the direction of the State Civil

Defense Plan, plans have been formulated for a central organization of bacteriologists to serve as key workers in the detection of biological agents

which might be utilized by the enemy in an attempted biological warfare attack. These members have been appointed and have signified their willingness to serve in such a capacity.

Close liaison is maintained with the Division of Disease Control, to facilitate transmissal of information pertaining to Communicable Disease reporting.

Other Outside Activities Include:

- 1. Membership on the Editorial Board of the Bulletin of State and Provincial Laboratory Directors Conference.
- 2. Membership on the Policy Committee of the Western Branch of the American Public Health Association.
- 3. Chairmanship of the Laboratory Section of the Western Branch of the American Public Health Association.

| TVPE (| OF EXAMINATION | FISCAL | | GAIN OR | |
|------------|------------------|---------|----------------------|-----------------|-------------|
| 1112 | or Examination | 1948-50 | 1950-52 | Number | % |
| Cuphilia | Examinations | 228,297 | 200,988 | —27,3 09 | —11.1 |
| Syphilis | Specimens | 115,074 | 101,403 | —13,671 | 11.8 |
| Gonorrhea | 1 | 1,508 | 1,182 | -316 | 20.9 |
| Enteric Fe | evers | 20,335 | 19,065 | -1,270 | —6.2 |
| Brucellosi | S | 4,972 | 5,916 | +944 | + 19.3 |
| Tularemia | | 4,958 | 5,756 | + 7 98 | +16.1 |
| Diphtheria | 1 | 1,200 | 1,016 | 184 | 15.3 |
| Tuberculo | sis | 4,129 | 6,648 | +2,519 | +61.0 |
| Parasitic | Diseases | 491 | 319 | -172 | -35.0 |
| | ous Examinations | 5,948 | 7.862 | +1,914 | +32.0 |
| | ental Sanitation | -,- | , | , | |
| | Products | | 110 ¹ | +110* | |
| | Analysis, Bact. | | 4,132* | +4,132* | |
| | LEXAMINATIONS | 271,838 | 252,998 ^s | -18,840 | 6.5 |
| | L SPECIMENS | 128,891 | 119,571 ³ | -9,330 | 7.2 |
| 10111 | of Doining | 120,071 | ,0,1 | 2,000 | 7.2 |

^{*} Examinations newly assumed: *1 Since Jan. 1, 1952; *2 For period July 1, 1951—July 1, 1952; *3 Exclusive of Water Examinations.

TABLE II

Report of Laboratory Examinations
For Fiscal Period 1950-52

| TYPE OF SPECIMEN | Specimens Submitted | Examina- tions | | | MINATIO | | | |
|-------------------------------|------------------------|-------------------|--------------|---|---------|------------|----------|--|
| SYPHILIS | Submitted | tions | Pos. | Dbt. | Neg. | Unsat. | Unclass. | |
| Blood | | | | | | | | |
| Kolmer Simplified | 96 910 | 96,910 | 2,819 | 638 | 90,305 | 3,148 | | |
| Kolmer Quanitative | | 344 | 176 | 7 | 131 | 30 | | |
| Kahn Standard | | 99,662 | 2,434 | 608 | 89,981 | 6,639 | | |
| Kahn Quantitative | | 349 | 159 | 5 | 150 | 35 | | |
| V.D.R.L. Slide | | 27 | 9 | | 18 | | | |
| V.D.R.L. Tube | | | •••• | | | | | |
| Mazzini | | 14 | 7 | | 7 | | | |
| Other (Kline) | | 6 | 4 | | 2 | | • | |
| Spinal Fluid | (0.4 | 60.4 | | | =00 | 2.4 | | |
| Kolmer Simplified | | 684 | 64 | 6 | . 590 | 24 | | |
| Kolmer Quantitative | 708 | 708 | 47 | 2 | 605 | 54 | 1 260 | |
| Colloidal Gold Test | •••• | 1,317 | • | | • | 57 | 1,260 | |
| Total Protein Other Fluids | | 962 | | | | 136 | 826 | |
| Kolmer Quantitative | 2 | 2 | | | 2 | | | |
| Lesion Fluids | 2 | - | * | | | | | |
| Treponema pallidum | | | | | | | | |
| Darkfield (direct) | | | | | | | | |
| Delayed | | 3 | | •••• | 3 | •••• | | |
| Stained Smear | | | | | | | | |
| (The following included | d | | | | | | | |
| in the above figures) | | | | | | | | |
| Number of Premarital | | | | | | | | |
| Tests | | | | | • | | | |
| Number of Prenatal | | | | | | | | |
| Tests | 101 102 | 200 000 | r 710 | 1 200 | 101 704 | 10 102 | 2.006 | |
| TOTAL SYPHILIS | 101,403 | 200,988 | 5,719 | 1,266 | 181,794 | 10,123 | 2,086 | |
| GONORRHEA | 1 171 | | 445 | | 000 | 10 | | |
| Smears | | 1,171 | 115 | 56 | 988 | 12 | • | |
| Cultures | | 11 | | | 10 | • | | |
| CompFixTOTAL VENEREAL | . 11 | 11 | 1 | | 10 | • | • | |
| DISEASES | 102 584 | 202,170 | 5,835 | 1,322 | 182,792 | 10,135 | 2,086 | |
| VINCENT'S INFECTION | , | 202,170 | 3,003 | 1,022 | 102,772 | 10,100 | 2,000 | |
| Smears | | 27 | 7 | 2 | 12 | 6 | | |
| DIPHTHERIA | | 2, | , | 2 | 12 | U | | |
| Direct Smear | 53 | 53 | 1 | 1 | 51 | | | |
| Culture | | 949 | 33 | 25 | 862 | 29 | | |
| Virulence Test | | 34 | 21 | | 13 | | | |
| TUBERCULOSIS | | | | | | | | |
| Sputum | | | | | | | | |
| Microscopic | 2,885 | 2,885 | 196 | . 2 | 2,615 | 7 2 | | |
| Culture | | 2,317 | | | | | 2,317 | |
| Animal Inoculation | | 31 | 2 | | 20 | 9 | | |
| Gastric Lavage | | | | | | | | |
| Microscopic | | 100 | | | • | • | 120 | |
| Culture | 1 20 | 128 | | | 114 | | 128 | |
| Animal Inoculation | 128 | 128 | 8 | • | 114 | 6 | **** | |
| Urine Microscopia | | | | 4 | | | | |
| Microscopic Culture | 256 | 256 | <u>AC</u>); | | •••• | | 256 | |
| Animal Inoculation | 230 | 285 | 18 | | 245 | 22 | 230 | |
| Timilal Inoculation | •••• | | 10 | | | | | |

| | | TABLE I | I (Continu | ıed) | | | | |
|--|-----------|----------|------------|---------------|---------|---------|----------|---|
| | Specimens | Examina- | | EXAM | INATION | N RESUL | TS | |
| TYPE OF SPECIMEN | Submitted | tions | Pos. | D b t. | Neg. | Unsat. | Unclass. | |
| Pleural Fluid | | | | | | | | |
| Microscopic | 24 | 24 | | | 24 | | | |
| Culture | | 24 | | | 22 | | 24 | |
| Animal Inoculation | | 58 | 1 | •••• | 55 | 2 | • | |
| Spinal Fluid Microscopic | 53 | E2 | | | 40 | 4 | | |
| Culture | | 53 48 | •••• | | 49 | 4 | 48 | |
| Animal Inoculation | •••• | 61 | 3 | | 47 | 11 | | |
| Miscellaneous (Drainag | | 01 | J | | ٠, | 11 | | |
| Fluids, Tissues, etc.) | 5-7 | | | | | | | |
| Microscopic | 87 | 87 | 1 | | | | 86 | |
| Culture | | 78 | •••• | | | | 78 | |
| Animal Inoculation | | 108 | 15 | • | 67 | 26 | | |
| Cultures, A. F. Bacilli | | | | | | | | |
| Confirmation of Path | 52 | 52 | 20 | | 21 | 1 | | |
| Blood | 34 | 52 | 20 | | 31 | 1 | | |
| CompFix | . 25 | 25 | 1 | | 24 | •••• | | |
| TOTAL | . 20 | 23 | • | | 2-1 | **** | • | |
| TUBERCULOSIS | 3,510 | 6,648 | 265 | 2 | 3,291 | 153 | 2,937 | |
| PARASITIC DISEASE INTESTINAL PARA | | | | | | | , | |
| Ascaris lumbricoides | 6 | 6 | 2 | 1 | 3 | | | |
| E. coli | 6 | 6 | | | 5 | 1 | | |
| E. histolytica | | | | | | | | |
| Giardia lablia | • | | | | | **** | | |
| Taenia nana | | | | | | • | | |
| Enterobius | | | | | | | | |
| vermicularis | | | | | | • | | |
| Chilomastix | | | | | | | | |
| mesnili Not specified | 231 | 235 | 4 | 6 | 208 | 2 | 15 | |
| CompFix | 4 | 4 | | | 200 | | 4 | |
| Specimens for | , | | • | | •••• | • | | |
| Ident, | 5 | 5 | • | | | | 5 | |
| MYCOTIC INFECTIO Epidermal Direct | NS | | | | | | | - |
| Microscopic | 17 | 17 | • | 1 | 5 | 2 | 9 | |
| Culture | 17 | 17 | | | | | 17 | |
| Pulmonary | | | | | | | | |
| Direct | | | | | | | | |
| Microscopic Culture | | | ** | | | | | |
| Blood for | •••• | | | • | | | | |
| Coccoidiodes | | 1 | | | 1 | | | |
| MALARIA | | | | | | | | |
| Blood Smears | 28 | 28 | 2 | 2 | 19 | 5 | | |
| FEBRILE DISEASES ENTERIC INFECTI Blood Agglutination Tests | | 20 | ۷ | 2 | 19 | J | • | |
| Typhoid "H" | 5,894 | 5,894 | 37 | 56 | 5,604 | 197 | | |
| Typhoid "H" Typhoid "O" | | 5,629 | 38 | 78 | 5,353 | 160 | • | |
| Paratyphoid A | | 24 | | | 24 | | | |
| Paratyphoid B | • | 5,894 | 10 | 10 | 5,712 | 162 | | |
| Clot Culture | | 4.4.66 | | | | | | |
| S. Typhosa | • | 1,160 | 3 | • | 1,128 | 29 | • | |

TABLE II (Continued)

| | | I ADLL I | | | | | | | | |
|-----------------------------|-----------|----------|------|---------------------|-------|----------|----------|---|--|--|
| muran on any | Specimens | Examina- | | EXAMINATION RESULTS | | | | | | |
| TYPE OF SPECIMEN | Submitted | tions | Pos. | Dbt. | Neg. | Unsat. U | Inclass. | | | |
| Feces Cultures | | | | | | | | | | |
| S. Typhosa | 469 | 469 | 3 | | 403 | 30 | 33 | | | |
| Other | | | | | | | | | | |
| Salmonella | | | | | | | | | | |
| Shigella | | | | | | | | | | |
| Other Enteric | | | | | | | | | | |
| Organisms | | | | | | | | | | |
| Urine Cultures | 50 | 50 | | | | | | | | |
| S. Typhosa | 52 | 52 | | • | 51 | 1 | * | | | |
| Other Enteric | | | | | | | | | | |
| Organisms Other | • | | | **** | | | | | | |
| S. Typhosa | | | | | | | | | | |
| (Milk) | 1 | 1 | | | 1 | | | | | |
| Other Enteric | | _ | | •••• | ^ | | • | | | |
| Organisms | 2 | 2 | | | 2 | | | | | |
| ENTERIC TYPINGS | | | | | | | | | | |
| Feces Cultures | | | | | | | | | | |
| Salmonella | | | | | | | | | | |
| Shigella | • | | | | | | | | | |
| BRUCELLOSIS | | | | | | | | | | |
| Blood | | 5.007 | 4.0 | 27 | £ (50 | 1.47 | | | | |
| Agglutinations | 1.0 | 5,896 | 43 | 27 | 5,679 | 147 | | | | |
| Blood Cultures | . 12 | 16 | | •••• | 13 | 3 | • | | | |
| Blood Clot | | 1 | | | 4 | | | | | |
| Cultures TULAREMIA | | 4 | | | 4 | | | | | |
| Blood | | | | | | | | | | |
| Agglutinations | 1 | 5,756 | 134 | 142 | 5,251 | 229 | | | | |
| Rat Bite Fever | ī | 1 | | | | | 1 | | | |
| INFECTIOUS MONON | UCLEO | | | • | | | _ | | | |
| Heterophile Antibodies | | | | | | | | | | |
| Davidson's | | | | | | | | | | |
| Presumptive | | 5,903 | 73 | 43 | 5,589 | 198 | | | | |
| Davidson's | | | | | _ | | | | | |
| Confirmatory | | 73 | 68 | •••• | 5 | | | | | |
| RICKETTSIAL INFEC | TIONS | | | | | | | | | |
| Weil-Felix | 62 | 77 | | | | | 77 | | | |
| Agglutinations | 63 35 | 77 32 | | • | | | 77 32 | | | |
| CompFixVIRAL INFECTIONS | 33 | 34 | | **** | **** | | 34 | | | |
| Cold- | | | | | | | | | | |
| Hemagglutinins | 93 | 93 | 5 | 9 | 33 | 29 | 17 | | | |
| CompFix | 28 | 32 | 1 | | 4 | 1 | 26 | | | |
| MISCELLANEOUS | | | | | | | | | | |
| Blood | | | | | | | | | | |
| Rh Factor | 930 | 930 | | **** | | 17 | 913 | | | |
| Blood Type | | 308 | | • | | 7 | 301 | | | |
| Red Cell Count | 10 | 10 | **** | •••• | | | 10 | | | |
| White Cell Count | 18 19 | 18 19 | • | | • | | 18 19 | | | |
| Differential Count | 5 | 5 | **** | | •••• | **** | 5 | | | |
| Chemistry Culture (other | 3 | 3 | | •••• | | | 3 | | | |
| than enteric) | 69 | 69 | | | | 3 | 66 | | | |
| Anti-streptolysin | 0, | 0) | | • | | · · | ÖĢ | | | |
| Titer | 1 | 1 | | | | | 1 | | | |
| Spinal Fluid | | | | | | | _ | | | |
| Microscopic, Direct | 41 | 41 | | | | | 41 | | | |
| Culture | 33 | 33 | | | | | 33 | | | |
| Cell Count | 4 | 4 | • | | | 1 | 3 | | | |
| Sugar | | • | , | • | | • | | | | |
| Total Protein | 2 | 2 | | | •••• | | 2 | 2 | | |
| Pandy's Test | | | | **** | | **** | • | | | |
| | | | | | | | | | | |

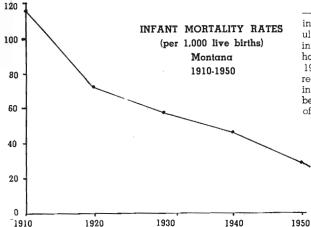
7

TABLE II (Continued)

| Society Francisco - Francisco | | | | | | | | | | | | |
|---|-----------|-----------|-------|---------------------|---------|--------|----------|--|--|--|--|--|
| TYPE OF SPECIMEN | Specimens | Examina- | | EXAMINATION RESULTS | | | | | | | | |
| | Submitted | tions | Pos. | Dbt. | Neg. | Unsat. | Unclass. | | | | | |
| Urine Clinical | | | | | | | | | | | | |
| Urinalysis | 9 | 9 | | | | | 9 | | | | | |
| Microscopic | 9 | 9 | | | | | ģ | | | | | |
| Chemistry | | • | | | | | | | | | | |
| Culture | 19 | 19 | | | | | 19 | | | | | |
| Pregnancy Tests | 2 | 2 | **** | | | 2 | | | | | | |
| Feces | | | | | | | | | | | | |
| Occult Blood | 21 | 21 | 6 | | 9 | 1 | 5 | | | | | |
| Chemistry | | • | | | | | | | | | | |
| Other Body Fluids, Ti | | | | | | | | | | | | |
| Transudates, Exudat | | | | | | | | | | | | |
| Microscopic | 2 | 2 . | **** | | | | 2 | | | | | |
| Culture | 2 | 2 | •••• | | | | 2 | | | | | |
| Other Types of | 7.4 | 7.4 | | | | | | | | | | |
| Cultures | 74 | 74 | •••• | | | | 74 | | | | | |
| Other Types of Smear | | 10 | | | | | | | | | | |
| Miscellaneous Nasal for | 12 | 12 | **** | | • | | 12 | | | | | |
| Eosinophiles | 17 | 17 | | | | | | | | | | |
| Cultures for Identifica | | 17 | **** | | | | 17 | | | | | |
| (other than | 11011 | | | | | | | | | | | |
| Enteric) | 33 | 33 | | | | | 22 | | | | | |
| Insects for | | 30 | | | | •••• | 33 | | | | | |
| Identification | 5 | 5 | | | | | - | | | | | |
| Miscellaneous Objects | 5 | ., | • | •••• | •••• | | 5 | | | | | |
| for Identification | 3 | 3 | | | | | 3 | | | | | |
| FOOD PRODUCTS | Ü | Ü | •••• | • | | • | 3 | | | | | |
| Microscopic | | | | | | | | | | | | |
| Examination | 1 | 1 | | | | | 1 | | | | | |
| Bacteriological | - | • | **** | | • | • | 1 | | | | | |
| Analysis | 14 | 14 | | | | | 14 | | | | | |
| Chemical Analysis | i | ì | | | | •••• | 1 | | | | | |
| Toxicological | | | | | **** | | | | | | | |
| Tests | | | •••• | | | | | | | | | |
| Precipitin Tests | | | | | | •••• | | | | | | |
| Animal tests | 1 | 1 | | | | **** | 1 | | | | | |
| Other | 3 | 3 | | | | | 3 | | | | | |
| TOTAL FOOD | | | | | | | | | | | | |
| PRODUCTS | 20 | 20 | •••• | | **** | | 20 | | | | | |
| WATER ANALYSIS | | | | | | | | | | | | |
| Bacteriological (Colifor | rm) | | | | | | | | | | | |
| Public Supplies | 2,843 | 2,843 | •••• | | | | 2,843 | | | | | |
| Private Supplies | 927 | 927 | •••• | | | | 927 | | | | | |
| Proposed supplies | 1 | 1 | •••• | | | | 1 | | | | | |
| Schools | 116 | 116 | • | | | | 116 | | | | | |
| Railroads | 44 | 44 | | •••• | | •••- | 44 | | | | | |
| Camps | 33 | 33 | •••• | | • | | 33 | | | | | |
| Federal | 152 | 152 | •••• | •••• | * | •••• | 152 | | | | | |
| Miscellaneous | 2 | 2 | | **** | **** | | 2 | | | | | |
| TOTAL DRINKING | | 4.440 | | | | | | | | | | |
| SUPPLIES | 4,118 | 4,118 | ••• | | **** | | 4,118 | | | | | |
| Swimming Pools | .1 | .1 | •••• | ••• | **** | • | 1 | | | | | |
| Sewage Pollution | 11 | 11 | | •••• | | •••• | 11 | | | | | |
| Biology, Aquatic | | | | | | | | | | | | |
| Specimens for | 2 | 2 | | | | | _ | | | | | |
| Identification | 2 | 2 | •••• | | **** | •••• | 2 | | | | | |
| TOTAL WATER | 4 4 4 4 4 | 4 4 4 4 4 | | | | | | | | | | |
| ANALYSIS | 4,132 | 4,132 | •••• | **** | •••• | | 4,132 | | | | | |
| GRAND TOTALS, | 440 | | | | | | | | | | | |
| ALL EXAMS | 119,571 | 252,998 | 6,591 | 1,727 | 222,127 | 11,550 | 11,003 | | | | | |
| | | | | | | | | | | | | |

TABLE III

| Record of Specimen Containers and Other Materials Shipped 1950-52 | |
|---|-----------|
| Syphilis | |
| Vials, Blood | 107,735 |
| Containers, mailers | 42,400 |
| Delayed Darkfield Outfits | 3 |
| Diphtheria | Ü |
| Culture Media, Loefflers | 2,562 |
| Containers, mailers | 1,015 |
| Swabs, Sterile | 2,562 |
| Tuberculosis | 2,302 |
| Bottles, Collection | 4,233 |
| Containers Mailers | 4,375 |
| Containers, MailersGonorrhea | 4,373 |
| | 1 675 |
| Slides | 1,675 |
| Mailers, Wooden | 802 |
| Enteric-Diseases | 2.2 |
| Widal Outfits | 33 |
| Bottles, Feces | 473 |
| Containers, Mailers | 656 |
| Miscellaneous | |
| Blood Culture Media | 96 |
| Nutrient Agar Tubes | 20 |
| Blood Culture Plates | 15 |
| Saboraud's Dextrose Agar | 23 |
| Control Sera, Lot | 82 |
| TOTAL PIECES | 168,760 |
| | - 55,7 00 |



INFANT DEATH RATE DECLINES

—While Montana's birth rate has increased from 16.2 per 1,000 population in 1910 to 26.8 in 1951, the infant (under one year) death rate has shown a steady decline. In 1910 there were 116.6 infant deaths recorded for every 1,000 live births in the state; that death rate has been cut more than 75% to a rate of 26.7 per 1,000 live births.

CHILD HEALTH SERVICES DIVISION

BIRTH RATES
(per 1,000 population)
Montana
1910-1950

Paul R. Ensign, director*

Summary

During this biennium the name of the division was shortened to Child Health Services combining the two divisions of Maternal and Child Health and Crippled Children's Services. This emphasizes that the division is dealing with the "whole child" and also provides opportunity under one director for the best possible use of staff.

Although the maternal death rate of 0.6 and the infant death rate of 26.7 are the lowest in the history of Montana, there still remains much to be done in the prevention of illness. Through classes for expectant mothers it is expected that more maternal and infant deaths will be prevented and that stronger babies with fewer malformations will be born. The continuing study of infant deaths is expected to reveal unmet needs.

The program for the school-age child is being improved though the staff to carry out a good program but it is still inadequate. Through the Joint Staff Committee, a committee composed of representatives of the State Department

ŝ

^{*} appointed April 12, 1952.

of Public Instruction and the State Board of Health, there is a better understanding for continued development of the health program for the school-age child.

Crippled children are, first and foremost, children with the usual problems of children and the crippling condition is only an additional factor which requires some one to pay for expensive medical corrections. In recognition of this fact, more consideration is being given to continuous medical supervision with emphasis on emotional health and the use of the Mental Hygiene Clinics. Mental health is being given an important place in the infant, preschool and school programs for both the apparently normal and the crippled child.

In addition to the more common crippling conditions, the crippled children's program has included, this biennium, cases of congenital and rheumatic heart disease, and genitourinary and gastrointestinal diseases of congenital origin. The Cerebral Palsy Program, solely dependent upon Federal Funds in the past 4 years, will see the end of the 5-year grant on June 30, 1953. Costs for caring for crippled children have risen, especially hospital expenses and braces. If the present scope of the crippled children's program, including cerebral palsy is not to be curtailed, increased state funds are necessary.

The present director of this division was appointed in April of 1951 to fill the vacancy that existed in the early months of this biennium. Prior to April, 1951 the executive officer gave direction to the program. The acquisition of a Maternal and Child Health Consultant Nurse in April, 1952 has also done much to strengthen the program of this division. This position had been vacant from the start of the biennium.

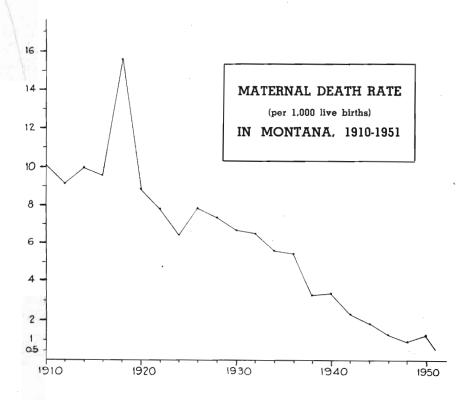
Maternity Services

New Program Plans

In 1950 and 1951, a study of maternal deaths revealed that 1/5th of the 30 deaths were due to attempted criminal abortion. This, in itself, points up a need for effective education. But it does not take into consideration the number of women, many already mothers of families, who do not die but are permanently crippled from such practice. Morever, it is generally conceded that a large toll of infant lives could be saved through the educational activities of the public health nurse: by prevention of premature infants, weak infants, and to a certain extent, infants with congenital malformations.

The objective of classes for prospective parents is to stimulate mothers to good prenatal practices as recommended by their physicians. These classes are so conducted that decisions are arrived at in group discussions. The public health nurse serves as a resource person. These discussions have proved almost 100 percent effective in getting mothers to follow better prenatal practices. Public health nursing visits should be used in an attempt to reach expectant mothers not reached through classes. The number of expectant parents visited will need to be increased.

The work of the Maternal & Child Health Consultant Nurse will stimulate the educational activities of the local public health nurses.



Program Development The continued interest of the Maternal & Child Health Committee of the Montana Medical Association has spurred the study of maternal deaths and part-time medical assistance was temporarily employed to implement the program. The committee has revised the maternal death questionnaire and added a group of questionnaires for the study of infant deaths.

Through cooperation with the Hospital Facilities and Public Health Nursing Divisions, hospital maternity units in Montana hospitals have been improved and meetings have been held with some of the hospital personnel. Together, these should make the delivery of babies in the hospitals continually safer.

Prior to this biennium only the "Prenatal Care" booklet was distributed to Montana mothers (via physicians, public health nurses, hospitals, etc.), but a very interesting booklet, "The Parents Book" is now distributed by this division.

Extramural postgraduate courses in obstetrics for physicians were resumed in the biennium and nurses have been invited to the courses. The courses were received enthusiastically. A team from the University of Colorado covered the eastern part of the state and will cover the western part of the state this year.

Significant Problems The greatest problem in starting maternity nursing classes and public health nursing visits to maternity patients is that of stimulating physicians to use these services for the betterment of prenatal care. There seems to be little opposition; the problem is that of having someone point out to the physician how these services might be used. The problem probably can be solved through a team approach by the public health nurse, the physician and the hospital.

Infant and Preschool

New Program Plans While the infant death rate in Montana is 26.8, the state's Indian infant death rate is 70; on some of the Indian reservations it is as high as 200. This is an appalling rate; as high or higher than in many of the countries in which the World Health Organization is using funds to reduce infant death rates. During this biennium a study was made on the Northern Cheyenne and Crow Indian Reservations and recommendations were made along the lines successful in public health practice elsewhere in reducing infant death rates. Gradually, parts of this recommended program are being brought into effect. This program should reduce the infant death rate as well as tuberculosis and other death rates. It stresses strongly, participation of the Indians in the development of a health program and recognizes the health problem as only a facet of a needed social regeneration. In addition to the present staff, medical personnel for the Indian hospital, a health educator and a nutritionist are needed for the program.



Child Health Conferences are used as an educational program to stimulate parents to obtain child health supervision from their family physicians. In order to encourage parents to obtain this supervision the demonstration given at the Child Health Conference should be of top quality. While there is a need

for an increase in the Child Health Conferences, the greatest need is for improved quality of the ones now being conducted. This will require, in many instances, a reduction in the number of children the physician has to see. It would, also, require conferences between all of the persons concerned—physician, public health nurse and the director of the division—to discuss the desired improvements.

Program Developments During the biennium four new Child Health Conferences were started in Big Horn County. This makes a total of 17 per month in the state. In addition, Indian children on the Northern Cheyenne reservation are given medical supervision at the new medical clinics. One was started on the Blackfoot reservation but has been discontinued because of the transfer of medical personnel.

The care of the premature and newborn has been greatly improved through the cooperation of the Maternal & Child Health committee of the Montana Medical Association; by working closely with the Hospital Facilities Division on the raising of standards; by teaching nursing classes the care of the premature by the Hospital Nursing Consultant; and by the medical-nursing team from the University of Colorado mentioned previously.

Through the infant death study a tabulation is being maintained on infant deaths in nurseries and any time that an unusually large number of deaths occur in one hospital nursery in a month, the hospital is contacted to ask if they know of anything unusual which could be causing the deaths. Infant deaths in the first months are the ones that must be attacked; the problems are mostly those of obstetric and hospital care.

The division has continued to distribute the "Infant Care" and "Your Child from 1 to 6" booklets and in the biennium, began distributing the "Pierre the Pelican" series which deals largely with the mental hygiene of the infant at the very earliest age. The first pamphlet of this series is sent to the parents when the child is 1 month of age and is followed each month by a pamphlet until the child is 1 year old. It was designed to be sent only to the parents of first-born babies but the demand has been large from those who have had more than one baby.

The distribution of silver nitrate, for use in the eyes of the newborn for the prevention of blindness, was continued. There has been several requests for penicillin rather than silver nitrate to be used; but this change has not been approved by the American Society for the Prevention of Blindness nor the Montana Medical Association.

The triple antigen against diphtheria, whooping cough and tetanus, and smallpox vaccine are furnished for all of the Child Health Conferences in the state. This policy was established during the last biennium and with it certain other policies for the immunizations of children at Child Health Conferences. The early work of the conferences was to stimulate immunizations, better nutrition, dental and medical supervision and medical corrections. While this work is continuing, it has been found that more and more time is needed for the mental hygiene program in these conferences. This is particularly true for the pre-school child.

Significant Problems

ş

à

Since the Division of Child Health Ser-

vices can work most effectively, and in some areas only through the local health services, there is a need for more local health departments and public health nurses. Even with more local health services the Division would not be able to give adequate consultant services unless a pediatrician consultant can be employed. Even now the medical consultant services have not been extended to many counties with local services because of lack of personnel



In developing services for Indian mothers and children, the greatest need

is for a local health department with trained personnel who can work with these people. There is a need, at least for a short time, for more personnel than is usual in a health department because of the differences in customs, understanding of living conditions and nutritional habits. Application has been made for private funds to employ trained personnel for work in the Cheyenne-Crow area.

The School-Age Child

New Program Plans

The old idea of a physical examination for every child every year by a physician at the school as the basis for a school health program has been outmoded for several years. The modern concept of a good school health program is a good physical examination by the family physician for the children which most need them as determined by: teacher-parent referral, teacher-public health nurse conference and teacher-parent-public health nurse conference. The modern concept also includes safe and healthful environment as part of the everyday school living to put health-teaching into practice. While most people agree the old method is outmoded, many are slow in getting together on the teamwork necessary for the newer concepts of a school health program. The Health Education Workshop is a tool for getting the school team members together. One is planned for the first month of the next biennium and other local workshops are to follow.

Program Developments The Child Health Division coordinates the Board's services to the School Age Child. Other divisions making major contributions to the program are those of Environmental Sanitation, Dental Health, Public Health Nursing and Health Education.

Consultation through individual conferences and group meetings is given to local school, public health and the medical and dental professional groups. A well balanced program providing for meaningful and scientific health instruction, health services and a healthful environment is the goal.

Teachers are encouraged to (and there is evidence that they are) assume their part of the program.

The School and Physicians Conferences, sponsored by the Montana Medical Association with the Montana State Dental Association, the State Department of Public Instruction and the State Board of Health resulted in stimulating interest and obtaining the cooperation of the educational, medical, dental and public health groups.

Toward the end of the biennium there was established a Joint Staff Committee between the State Department of Public Instruction and the State Board of Health. This committee was formed in order that the two agencies can more readily function in joint accord in performing services in public education and public health that may be of common interest.

The committee is composed of the State Superintendent of Public Instruction, the Executive Officer of the State Board of Health and three staff members from each agency.

This committee develops and recomends to the chief officers, policies and plans, program suggestions and coordinates agency functions.

An operating agreement has been developed and adopted. A jointly sponsored workshop on School and Community Health and Safety was planned to be held early in the next biennium.

An advisory council to the Joint Staff Committee will be appointed.

Before the formation of the Joint Staff Committee a "Guide for Teachers for the Montana School Health Program" was prepared jointly by members of the two agencies working together with the University of Montana, the Montana Extension Service and the Montana State Department of Public Welfare.

The State Board of Health provides health records for the school program.

Significant Problems

Many people in the teaching and medical professions do not understand what the other profession is doing and this often leads to unwarranted criticism.

Teachers must learn that by their observations and attitudes they contribute more to the health of the child than can a medical examination by itself. Physicians must learn that teachers who report observations are not diagnosing and that there may be some who are falsely reported in any screening process.

It must be recognized that the child is part of a community and that his health is not separable from the general health of the community or from that part of the community which is represented by his home. An illness, be it mental, emotional or physical, at home effects his health. Milk and water of the community effect him; an epidemic in the community does likewise and the emotional health of school children must be recognized as the most important problem the school has to deal with. The program is more easily identified if it is called a program for the health of the school age child.

The School-Physician conference held during the biennium and the State Medical Society's Committee on School Health have helped in preparing the way for this integration. The next step is in working in local areas and in obtaining local health services. There is also a need for more medical personnel available for consultation service to local areas from this division.

Related Activities

The health supervision of the school age child should be based upon the well child supervision of the preschool child. Such an arrangement will prevent many of the problems of the school age child. Frequently, because no good medical supervision of the preschool child (which includes guidance for the parents and children) was available, delinquent children have developed in later years. It is believed that most of the children in corrective institutions are there because it was not possible for the Division of Child Health Services and related agencies to carry out completely their responsibilities and program.

It is, therefore, fitting that the director of this division should have been appointed by the Governor as the chairman of the Advisory Committee for the Boys Industrial School in Miles City and as a member of the Governor's Committee on the Prevention of Juvenile Delinquency.

.

This division extended assistance to the Division of Child Welfare Services of the Department of Public Welfare in developing health programs for institutions under its supervision. Specifically, a visit was made to the Villa Ursula School at St. Ignatius to serve as a pilot study to assist in other institutions. The plans are to visit two more institutions in a similar capacity.

At the request of the Montana Agricultural Extension Division, this division participated in the Nutritional Survey of 15-year-old students in Bozeman and Great Falls. It was at the request of this division that Dr. Sanstead, Nutritional Consultant of the United States Public Health Service, came to Montana as a consultant to the physicians participating in this program.

Crippled Children's Services

New Program Plans

The great interest in the cause or causes of congenital malformations, evident in many papers on this subject at the 1951 American Public Health Association meeting in San Francisco, has not only pointed out that it is possible to prevent many malformations and in the future save the money expended for the correction of these defects but it has also brought closer together the crippled children's services and the maternity and infant services. There seems to be some indication that nutrition may be a contributing factor to the prevention of congenital malformations.

If it is possible to obtain funds for the demonstrations on the Northern Cheyenne and Crow Reservation, this division plans to study this problem further.

Because the Cerebral Palsy Center needs a representative at the Crippled Children's Clinics to work with patients and physicians and make follow-up visits under the direction of the physician at the clinic, it is planned to have a qualified physical therapist from the Center attend the Crippled Children's Clinics in the comng year.

Program Developments During the biennium many types of cases besides the usual orthopedic cases have been accepted because it is recognized that children with deformed limbs are not the only crippled children. Noteworthy among the additions has been the care for children with congenital heart lesions. These, so far, have had to be sent out of the state, notably to Denver. Three cases have been accepted for care and applications for others have been received.

The rheumatic fever program has been included under the child health program for many years. Rheumatic fever is complex and requires: (1) early diagnosis, (2) consultation, (3) hospitalization, (4) convalescent care, and (5) preventive measures.

At the close of the last biennium a Rheumatic Fever Center was established in Great Falls. This is a pilot program for providing certain diagnostic and consultative service upon physician referral. The Center's services are available to children and physicians in areas adjacent to Great Falls; it is not a state-wide program.

A state-wide program has been developed for acute cases, including limited hospitalization in local areas and for limited convalescent care for chronic cases at the Shodair Hospital in Helena. The State Board of Health has been given a special rate by Shodair for these cases. Under this plan, the parents or someone in behalf of the parents pay a small fee of \$2.00 per day, the State Board of Health pays \$4.00 per day.

The addition of a Montana plastic surgeon to our staff of consultants has increased the ability to serve this type of case. Most congenital malformations in the genitourinary and gastrointestinal systems may now be cared for in Montana and have been added to the division's caseload. Heretofore, only a few cases which had to go out of state for care were included.

Better follow-up of cleft palate children has been attempted through the use of a speech correctionist whose salary was paid by the Montana Crippled Children's Society and travel expenses were paid by the State Board of Health. The correctionist traveled to many out-lying areas to aid children whose palates had been repaired; many of these children were badly in need of speech therapy to complete the treatment.

A co-director, in addition to the part-time director, who is a physician for the Cerebral Palsy Center, was jointly appointed by Eastern Montana College of Education, the Montana Crippled Children's Society and the State Board of Health, to coordinate the services of the three agencies. Services of the Cerebral Palsy Center have been made statewide during the biennium. It is a somewhat limited coverage because there must be a public health nurse for follow-up, otherwise the services given would usually be wasted. Also, there must be an agreement with the school authorities in the child's home community so that

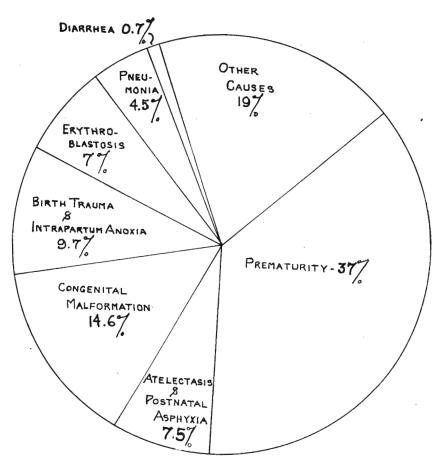
8



educational follow-up will be available. At the present time considerable effort is being made to get the cooperation of the family, the private physician, the local public health nurse, the State Board of Health and its consultants and the hospital. It is believed that all crippled children will benefit by this method. The chief difficulty is getting immediate reports to the various people concerned.

Because regulations require that hospitals be paid only on a per diem cost rate or less, it has been necessary to get per diem cost rates from many of the out-of-state hospitals, which for some reason had not been obtained before. Some out-of-state hospitals could not supply cost rate information. This resulted in discontinuance of service in some out-of-state hospitals; one of these is the Mayo Clinic. A meeting was held with some of the hospital administrators to see if there was any possibility of obtaining lower rates, because the rising cost of hospital care was rapidly depleting the fund. Some

MONTANA INFANT MORTALITY-1950



hospitals agreed to bill at their regular charges or the per diem cost rate, whichever was the smaller.

The Crippled Children's Clinics are held in the spring and fall. There has been an attempt to improve these clinics by cutting down on the case load and by encouraging better supervision of the children so that they would at least obtain immunizations and nutritional guidance from family physicians. Because of the number of children on the program, it has not been possible to give much attention to guidance.

Significant Problems The increase in the cost of hospital care and of braces and the acceptance of rheumatic fever and other non-orthopedic cases is making it increasingly difficult to stretch the appropriation to meet the needs. (Physicians' fees have not been raised.) However, by trying to stretch the dollars as far as they will reach, by asking parents to help as much as possible and by an additional grant of funds from the Chil-



PREVENTIVE MEDICINE—Dr. Carl W. Hammer, Bozeman-Gallatin County Health Officer, is examining this baby at one of the city-county health department's regular Well-Child Conferences. This mother knows that the best way to protect her child's health is to avoid and prevent illness—this is the aim of the well-child conference: helping the parents protect the child's health. Health officers and local physicians cooperate in many areas of the state in conducting these conferences.

dren's Bureau, it is hoped that the program can continue until time for the next appropriation. In speaking of money, it seems almost inexcusable to have to spend funds for the treatment of absolutely preventable diseases. Tuberculosis of the bone, a disease largely preventable through the use of pasteurized milk, should be extinct. However, a recent review of cases under this division revealed that some \$50,000 has been spent in the treatment of tuberculosis of the bone. Of this amount, \$17,000 was spent on one single case, \$18,000 on another single case, both over a period of several years.

The problems of the hard of hearing children and their training comes to this division from most areas of the state. There are many hard of hearing

children who could be better trained at home than in a school for the deaf. Some children, of course, need institutionalization but there is a growing tendency to recognize the need for training children outside the institution. The problems of the hard of hearing would seem to be the most important need not now being satisfied.



SEE. DOCTOR?—A visit to the dentist's office is an important part of dental health education for the school-age child.

F. I. Livingston, director

Summary During the period covered by this rereport, general responsibility for the fluoridation program was given to the Division of Dental Health. Two cities now have programs of controlled fluoridation of the public water supply as a means for the partial prevention of dental decay. Two other cities, and one Indian Agency have received approval to fluoridate the public water supply. Assistance continues to be provided to thirty-eight other cities in which community interest has been shown in fluoridation.

Greater coordination has been achieved between the dental phases of the preschool health program and school health program; as indicated by the increased number of children entering school showing evidences of adequate dental supervision.

The mobile dental unit was reactivated for one month and provided dental service to preschool, school, and high school children of Powder River County.

Postgraduate education for practicing dentists continued to receive major emphasis.

To achieve greater effectiveness and efficiency, an endeavor has been made to transfer, gradually, to the Division of Health Education, certain Dental health education activities previously carried on by the Division of Dental Health.

Program Devolopment

Controlled Fluoridation of Communal Water Supplies
The Montana State Board of Health on

January 20, 1951, issued regulations governing the controlled fluoridation of public water supplies, as a mass public health measure for the partial control of dental decay. These regulations were amended by the Board October 6, 1951.

Board approval was granted for the controlled fluoridation of the public water supply of the City of Roundup (population 2,856) on July 3, 1951; for the City of Chinook (population 2,307) on August 13, 1951; for the City of Dillon (population 3,268) on January 11, 1952; Fort Belknap Consolidated Agency, U. S. Indian Service (population 141) on May 26, 1952.

The controlled fluoridation program for Roundup started operating on February 15, 1952; for Chinook on March 3, 1952. Fluoridation equipment has been purchased by Bozeman, Dillon and Fort Belknap Consolidated Agency, United States Indian Service. These three communities will have programs of controlled fluoridation in the near future.

Community organization for controlled fluoridation programs is the responsibility of the Division of Dental Health. Procedures utilized are: talks before community group meetings; use of sound and color films; printed literature; library loan packets on recent scientific findings in the use of fluorides for the partial control of dental decay; an interpretation of the program and advisory and consultation planning service to city official, and professional groups.

Surveys of the dental condition of the children of selected areas are made before controlled fluoridation is instituted for the area, and will be conducted at specified yearly intervals thereafter to evaluate the effectiveness of the program. Local dentists are providing training courses in approved methods of conducting the surveys and assembling data.

Dental surveys are also in progress in areas where fluorides do not occur naturally in the water supply. Results of these surveys will be compared with survey figures previously obtained on the dental condition of children who have, since birth, drunk water containing known amounts of naturally occurring fluorides. As the controlled fluoridation programs operate over a period of years the survey figures obtained from these programs will be studied in relation to the survey figures obtained from the other two groups of children.

The Division of Environmental Sanitation provided assistance on and is responsible for all engineering phases of controlled fluoridation programs.

Personnel of the Division of Dental Health and the Division of Environmental Sanitation attended the Conference on Fluoridation at the University of Washington, Seattle, in April, 1951.

A U. S. Public Health Service portable exhibit (10' x 7' x 4') showing

the fluoridation equipment, and a projectograph movie telling the story of fluoridation was displayed at nine state meetings between March 7 and June 7, 1952. Dental personnel provided advisory service, distributed literature and answered questions on controlled fluoridation, in connection with this exhibit and movie.

Child Health Services

The Division of Dental Health started operating October 1, 1946; the school dental health program was first established by this division for the school year 1947-1948. An evaluation of this activity for the five year period from 1947-48 to 1951-52 shows:

- (1) The school year report, 1947-48 listed 692 schools with 2,325 teachers, and 52,704 pupils in 44 counties participating in the school dental health program.
- (2) The highest school year report, 1949-50, showed 1,000 schools, with 2,790 teachers, and 60,641 pupils in 52 counties participating in the school dental health program. In this year the maximum possible participation was almost reached.
- (3) Figures for the dental phase of the school health program for the school year 1950-51 shows 588 schools with 2,108 teachers, and 50,230 pupils in 41 counties participating in the dental phase of the school health program.



In 1951 the School Dental Health Program Report previously distributed annually by the Division of Dental Health to all school superintendents, dental societies and public health personnel, was discontinued.

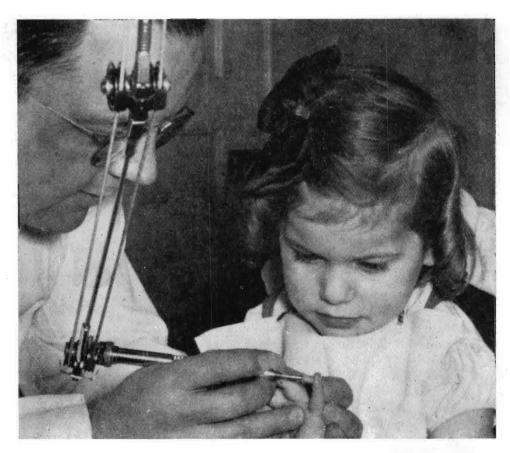
(4) Figures for the dental phase of the school health program for the school year 1951-52 show 735 schools with 2,405 teachers, and 57,204 pupils in 43 counties participating in the dental phase of the school health program.

Coordination of the preschool dental health program with the school dental health program was apparent in 1949-1950 from the large number of preschool dental referral cards, showing satisfactory dental conditions, presented to teachers by entering kindergarten and first grade pupils. These cards are included in the school card packets returned to the Division of Dental Health at the close of the school year.

In January, 1951, dental division personnel made a detailed dental examination at the Children's Dental Clinic, Butte, of 600 children eligible for dental service. This activity assisted and provided needed information for the members of District No. 3 Dental Society who operate the clinic without remuneration.

A dental survey of Grade 1 and Grade 8 children in Libby was conducted by personnel of the





CHILD HEALTH SERVICES—For the school year 1950-51, 588 schools with 2,108 teachers and 50,230 pupils in 41 counties participating in the dental phase of the State Board of Health school health program.

dental division in May, 1951, to evaluate the local dental program, and to obtain figures for comparison with other state areas.

The Division of Dental Health cooperated with the Division of Child Health, to secure specialized dental care for thirteen crippled children, following surgery for cleft palate. Ten of these cases have been brought to completion with excellent results, the remaining three cases are still under specialized dental treatment.

Postgraduate Education

In February, 1951, four private dentists were sent to the College of Physicians and Surgeons, San Francisco, for a nine-day postgraduate course in dentistry for children; six dentists were sent to take this course in April, 1951; five more dentists were sent to take the course in January, 1952.

Mobile Dental Unit



MOBILE DENTAL UNIT—The State Board of Health mobile dental unit provides needed dental examinations and service for children in isolated areas of the state where there are no resident dentists. In addition to control dental services, the unit is used for dental health education demonstrations and provides to parents consultation and advisory service on child dental health.

The Montana State Board of Health Mobile Dental Unit Program was reactivated November 15, 1951, through funds raised locally. The unit was operated by George W. Smith, D.D.S. from November 19, 1951, through December 19, 1951, in Powder River county, with headquarters at Broadus. Total attendance at the trailer included 30 preschool children,173 grade school children, and 46 high school pupils. This was a total of 249, from 16 schools or school districts.

Of the 249 examined, 44 children would not accept dental care; 31 required

no dental service; 137 were admitted to dental service; 100 received all the necessary dental care required. Time did not allow complete dental care to be provided the remaining 37 children. A total of 674 operations were performed. The Mobile Dental Unit Program was discontinued on December 24, 1951, when no other locality was able to raise the funds needed monthly (\$843.30) and no state funds were available.

Problems and Recommendations (1) Montana has thirteen counties which do not have any resident dentist. Residents of most of these counties have to travel anywhere from 50 to 100 miles to secure dental care. This is one of the reasons state or federal funds should be provided to sustain the work of the Mobile Dental Unit Program.



HER FIRST VISIT—Early and regular visits to the family dentist are the key to dental health control in the preschool and schoolage child.

- (2) Due to the large land area of Montana the district dental societies of the Montana State Dental Association cover large areas. This makes it difficult for local dentists to attend district dental society meetings, and, therefore, the Division of Dental Health must, in the majority of cases, communicate directly with the dentist in private practice, entailing either personal visits or a great amount of correspondence. Plans are being considered by the Montana State Dental Association for the redistricting of dental societies. This should result more effectively in meeting community dental health needs, through the combined activities of the State Council of Dental Health, Montana State Dental Association, and the Division of Dental Health, State Board of Health.
- (3) The two problems listed above cannot be effectively handled without additional personnel being employed in the Division of Dental Health. The present staff consists of one public health dentist and one stenographer. It



FLUORIDATION EXHIBIT—This portable exhibit, showing the equipment for fluoridation, and a projectograph movie telling the story of fluoridation, was displayed at nine state meetings between March 7 and June 7, 1952. Dental spersonnel provided advisory service, distributed literature and answered questions on controlled fluoridation, in connection with this exhibit.

is recommended that at least one field dentist and one dental hygienist should be added to the staff, so that adequate service may be provided in the local areas to plan and to assist in conducting community dental Health programs.

(4) Coordination by the Division of Local Health Services of the activities of all programs will result in more effective use of the time of the personnel of the Division of Dental Health. In certain programs the Division of Dental Health does not assume the major role, but endeavors to coordinate activities with the division providing the major public health service.

Related Activities The requested reorganization of the dental department of the Montana State Hospital at Warm Springs was completed in November, 1951, of this biennium. The two staff dentists were oriented in institutional dental care, and assisted in examining, charting and grouping for service, all patients in the hospital. An application for the certification of the dental department of this hospital is now before the American Dental Association Council on Hospital Dental Service. The only hospital dental service now accredited in Montana is the dental department at the Veterans Administration Center, Fort Harrison.

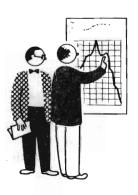
Director, Division of Dental Health, was elected Fellow, American Association for the Advancement of Science; for a three-year term as a member of the Executive Council, American Association of Public Health Dentists;

and for a one-year term as Superintendent of District Societies, and reappointed Chairman, Hospital Dental Service Committee, Montana State Dental Association. Also, a certificate was received for the preparation and presentation of a table clinic and exhibit on dental health education, during the 48th Annual Convention, Montana State Dental Association in 1951.

— 64 **—**

DISEASE CONTROL

 G. D. Carlyle Thompson, acting director*
 W. F. Kimmell, director Tuberculosis Control & Chest X-ray Survey.





Summary

The Division of Disease Control is principally responsible for carrying out the Board's legislatively designated duties of making inquiries and studies regarding: the causes of disease, and especially communicable diseases and epidemics; the causes of mortality and the effects of localities, climates, conditions, ingesta; the habits and circumstances of health of the people of the state; and to recommend and carry out the proper steps to check such diseases and to assist local and county health officers in the suppression of these diseases.

Within the scope of interest of this division are the acute communicable diseases, the venereal diseases, tuberculosis, cancer, heart disease, other chronic diseases, industrial health problems, and any other disease conditions requiring study, recommendations and control methods. Each of these areas will be described separately.

Montana law requires that all persons engaged in the healing arts, house-holders, and certain responsible school personnel in the state report cases of communicable diseases to local health officers. The health officers are required to report these cases each week to the State Board of Health. Summarized listings are forwarded by the State Board of Health to the Surgeon

^{*} position filled by Kenneth E. Markuson, M. D., June 10, 1951 to June 10, 1952; vacant July 1, 1950 June 10, 1951 and June 10, 1952 June 30, 1952.

General of the U. S. Public Health Service, where they become a part of the weekly communicable diseases incidence picture for the United States.

In this biennium there was a substantial increase in the number of cases of infantile paralysis and a slight increase in the number of Rocky Mountain spotted fever cases recorded in the state. In this period typhoid cases remained at about the same level; diphtheria continued to exist but the small number of cases in the state reflects a decline; and there were no cases of smallpox reported in the state.

In working to maintain and improve the health of Montanans employed in industry, the industrial hygiene program has been made a part of the Division of Disease Control to insure the closest integration of activities in the medical, engineering and chemical fields. The industrial hygiene laboratory operations were altered in this biennium to include the food and drug chemistry laboratory within the same physical facilities. Staff vacancies have limited the industrial hygiene program. Medical participation had to come from the Board's executive officer for half this biennium because the position of Disease Control Director was vacant; a chemical engineer was available in this program for only six months of the biennium.

Detailed study of the chest X-ray survey activities during this biennium illustrates two important factors: (1) The percentage of adults taking advantage of the opportunity for a chest X-ray is too low, and (2) The percentage of persons referred to their private physicians with possible chest pathology, and who are subsequently never heard from, is too high.

To assist in improving these factors the Montana Chest Survey Program was jointly reviewed and evaluated, resulting in the establishment of an improved program by the Montana Tuberculosis Association and the State Board of Health. Three health educators were assigned to the Survey, more technicians employed, and new procedures were developed for promotion and follow-up. During the past biennium an additional mobile X-ray unit was purchased and adapted to taking 4×5 stereoscopic chest films in the chest X-ray surveys.

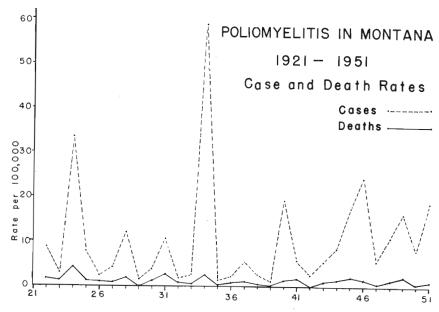
New Program Plans

Conference and committee work between Board of Health staff and local health officers, during the later months of the biennium, should result in adoption by the Board, early in the next biennium, of communicable disease rules and regulations based on present-day scientific knowledge. It is planned, following the adoption of such new rules and regulations to actively promote better and more effective reporting by all persons concerned throughout the state and thus permit better evaluation and control of communicable disease problems in Montana.

Significant Problems

Because the division was without a director for half of the biennium and because of other professional and technical vacancies, the division of Disease Control has been severely handicapped and has been unable to function as effectively as is desired and needed.

The executive officer gave assistance so far as was possible, but this was



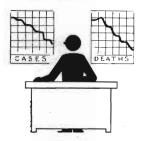
largely confined to the most pressing and urgent problems related to communicable disease, venereal diseases and industrial hygiene. The tuberculosis program and the chest X-ray survey had stabilized direction through the biennium, but the effectiveness was curtailed by staff vacancies and turnover in staff. However, the biennium closed with the principal important Board of Health staff vacancies in this division.

A major problem in the program of this division was the inadequate reporting, throughout the state, of communicable diseases. Part of this is explained by the need for up-to-date Board of Health communicable disease control regulations.

ACUTE COMMUNICABLE DISEASE CONTROL

Typhoid

While typhoid fever has remained approximately at the same level for the past four years, it is believed that additional cases of typhoid fever have occurred, but have not been reported as such. Conclusive diagnosis has been



made more difficult by the early use of antibiotic treatment which, in many cases, eliminates the opportunity to prove the diagnosis. This presents a public health problem: typhoid carriers may occur without recognition. Better reporting of possible cases is necessary for appropriate public health investigation and follow-up. With present day sanitation being stressed, typhoid fever should decline until it seldom occurs. Today's problem in typhoid

fever is principally the typhoid carrier; this requires effective local health department service.

Typhoid fever in institutions is a constant threat because of the carrier. During the biennium it was recommended that the state mental hospital immunize all of its patients to typhoid fever. The State Board of Health furnished the necessary typhoid vaccine to the hospital for the purpose and the hospital staff carried out the immunizations.

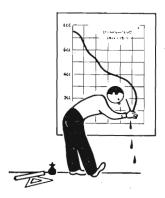
During the spring of 1952, the Milk River flooded towns along its course betwen Havre and Nashua, east of Glasgow. In cooperation with local health authorities, typhoid immunization clinics were conducted throughout this area. The State Board of Health furnished nurses, a physician, typhoid vaccine and other materials to assist local health officers and local volunteers. Vaccinations were given to approximately 8,500 people.

In addition to this activity, the divison cooperated with the division of Health Education and the division of Environment Sanitation in the preparation of bulletins advising the people about safe emergency measures to be taken during the flood for the prevention of outbreaks of communicable disease, particularly typhoid fever and the dysenteries.

No outbreak of intestinal disease occurred as a result of the flood. But one case of typhoid marred the record. Typhoid fever occurred in a man who refused to follow advice with regard to the use of the water supply and vaccination. In view of the inability to prove this typhoid fever originated from any other source, it must be presumed that he developed it from his drinking water supply and because of his refusal to be vaccinated.

Diphtheria

Diphtheria continues to exist in Montana; the small number of cases recorded in this period reflects a decline from the previous biennium. While this may indicate the operation of excellent preventive measures throughout the state it also reflects that such preventive measures are not as adequate as they should be. Diphtheria is a preventable disease and should be reduced to a rare occurrance.



Rocky Mountain Spotted Fever

Rocky Mountain Spotted Fever, at a low ebb in 1944, has shown some tendency to increase during this biennium. The number of cases still remains small with only 10 cases reported in 1951. The development of new antibiotics, effective in early treatment, has tended to modify the extensive immunization programs necessary in former years. This disease is an excellent example of the effect of the new scientific knowledge on certain public programs for the elimination of control of disease. With

the new antibiotics available for treatment, the utilization of immunization procedures in this disease requires individual consideration of the probability of exposure and thus modifies considerably the health department's role.

Smallpox

Smallpox did not occur during this biennium. This marks the third year in Montana's history (and the first time for two consecutive years) a case of smallpox has not been reported within the state. Smallpox is a wholly preventable disease and it is hoped that there will follow a long series of years in which no case of smallpox is reported. This record has been achieved in many states.

Immunization Materials

During the biennium, the State Board of Health distributed various immunization materials as shown in Table 7. These materials are furnished to local physicians upon request for locally-sponsored immunization programs. Immunization material for smallpox, diphtheria, whooping cough, and tetanus, when used in regularly conducted child health conferences, were furnished without cost to the local area. Also, in this biennium typhoid vaccination materials were furnished to the Milk River flood areas without cost. All other immunization materials are distributed to local areas at state contract prices.

VENEREAL DISEASE CONTROL

From tables No. 3 and No. 6 it can be seen that the incidence of both gonorrhea and syphilis have continued to decline during the years 1950 and 1951. The decline is noted in all categories of syphilis. It is probably partly explained by the more effective antibiotic treatment. But further study, not possible in this biennium because of the lack of staff, may show that this decline is the result of incomplete reporting. This has been true in other areas of the country. Inadequate reporting in venereal diseases is particularly im-

T



portant because of the loss of opportunity for source contact investigation and thus bringing such contacts under treatment. Treatment of such contacts is essential in eliminating individual carriers as foci of infection in the community. With the adoption of the Board's new rules and regulatons pertinent to communicable diseases and the planned effort at better reporting, more cases and contacts will be brought under surveillance and more effective venereal disease control will result.

Amount of Various Antiluctics Distributed by State Board of Health

| | Penicillin (units) | Arsencials (doses) | Bismuths (doses) |
|-----------|-----------------------|--------------------|------------------|
| 1950-1951 | 518,700,000 | 875 | 1,132 |
| 1951-1952 | 637,300,000 | 430 | 460 |
| TOTAL1 | ,156,000,000 | 1,305 | 1,592 |



OUNCE OF PREVENTION—Larry Hancock, Billings, holds his dog, Spot, while Dr. R. L. Cowen, Billings veterinarian, gives the pet his annual anti-rabies vaccination. The annual vaccination of pets against rabies is the key to community protection against an outbreak of the killing rabies. In January of 1952 the State Board of Health initiated a cooperative program with the Livestock Sanitary Board, the Montana Fish and Game Department, the U. S. Wildlife Service, and the Extension Service to "keep Montana rabies free."

The above chart shows the amounts of penicillin, arsenicals and bismuth compounds distributed free of charge to Montana physicians for the treatment of reported cases of venereal diseases. This chart indicates the growing acceptance of penicillin in the treatment of venereal diseases. The close of the fiscal year 1952 marked the issuance of a new State contract for antiluetics and the removal of arsenicals and bismuths from the contract.

CANCER CONTROL

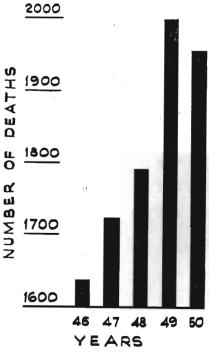
The cancer program of this division is of three phases: (1) Registration; (2) Education; and (3) Chest Xi-ray survey case finding. The cancer register, established six years ago, continues to be the principal program conducted throughout the biennium in this field. The register maintains a record of every case of cancer reported to the State Board of Health. Reports are received from pathologists, physicians and from death certificates. In cooperation with the Montana Medical Association, important data is secured from physicians for statistical tabulation. The most significant development in conection with the cancer register during the biennium has been the increased reporting of cases of cancer among living persons. This will permit, in years to come, the evaluation of many important aspects

of cancer in connection with patient cooperation, physician diagnosis and treatment, and educational programs. Tables No. 1 and 2 show cancer by initial site, the trend of cancer reported during the six-year period, and a comparative status of cancer reported in 1946 with that of 1952.

The second aspect of the cancer program is related to educational activities both in regard to the public and the medical profession. In each June of the biennium, in cooperation with the Montana Medical Association, the State Board of Health conducted lectures for physicians in six communities of the state. The speakers were prominent physicians from outstanding university medical school cancer centers.

In addition, a bi-monthly publication, **The Cancer Bulletin**, was distributed first in November 1950, in cooperation with the Montana Medical Association, to each physician in the state.

The third phase, the chest X-ray survey program, offers an important method of early case-finding. Lung cancer is subject to early detection and if treated promptly offers real opportunity for cure. Lung cancer may prove as important a disease as pulmonary tuberculosis in Montana and in some locations and in certain age groups it may be more prevalent.



LEADING KILLER—Heart disease is the greatest killer in Montana, as it is throughout the nation. From 1946 to 1950 deaths from heart disease in the state increased more than 300; in 1950, every third death in Montana was due to heart disease.

HEART CONTROL

The heart program is confined almost wholly to educational activities and to a study of heart disease as it is observed from death certificates. During June of 1951 the first series of heart lectures for physicians were conducted in six of the principal centers of the state in cooperation with the Montana Medical Association. Also in 1951, in cooperation with the Montana Medical Association, this division initiated the distribution of the publication Heart Bulletin to each physician in the state four times each year.

The chest X-ray survey is also a phase of the heart program in case finding. It allows early referral to physicians following the discovery of certain heart conditions.

TABLE 1
Status of Living and Dead Cases of Cancer at Time of Reporting by Sex

| Year | Site Unbrown | Site Climitowii | Month | | Digostino Troot | Digestive rider | | Nespiratory | | Breast | Cenitals | | Urinary | | Skin | | | Endocrine | Lymphatic & Haemotopopietic | Tissue | Other | | ſot | al | Total |
|------|--------------|-----------------|-------|----|-----------------|-----------------|----|-------------|---|--------|----------|-----|---------|----|------|----|---|-----------|--------------------------------|--------|-------|----|-------------|-----|-------|
| | M | F | M | F | M | F | M | F | М | F | M | F | М | F | М | F | M | F | М | F | M | F | М | F | |
| 1946 | | | 42 | 13 | 55 | 48 | 10 | 3 | | 85 | 33 | 86 | 15 | 7 | 71 | 46 | 3 | 5 | 18 | 7 | 17 | 11 | 264 | 311 | 575 |
| 1947 | 2 | 1 | 51 | 12 | 258 | 152 | 66 | 13 | | 127 | 91 | 139 | 31 | 18 | 91 | 49 | 3 | 7 | 13 | 12 | 30 | 25 | 636 | 555 | 1191 |
| 1948 | | | 85 | 9 | 218 | 128 | 81 | 8 | 1 | 132 | 97 | 155 | 60 | 21 | 142 | 80 | 5 | 7 | 28 | 12 | 39 | 33 | 756 | 585 | 1341 |
| 1949 | 9 | 9 | 77 | 12 | 244 | 164 | 71 | 15 | 4 | 133 | 108 | 138 | 51 | 18 | 143 | 85 | 2 | 6 | 22 | 10 | 39 | 26 | 77 0 | 616 | 1386 |
| 1950 | 17 | 25 | 93 | 15 | 198 | 159 | 71 | 22 | 1 | 144 | 97 | 167 | 45 | 20 | 160 | 92 | 7 | 7 | 32 | 21 | 33 | 20 | 754 | 692 | 1446 |
| 1951 | 30 | 15 | 96 | 14 | 200 | 153 | 83 | 14 | 1 | 119 | 85 | 153 | 46 | 17 | 149 | 94 | 2 | 12 | 49 | 31 | 28 | 21 | 769 | 643 | 1412 |

—72 —

TABLE 2
Living and Dead Cases of Cancer at Time of Reporting and Comparison with Same Cases as of December 1, 1952

| YEAR | Male | LIVIN Female | IG Total | Male | DEAI Female | Total | | NG AND Female | D DEAD Total | |
|--------------------|------|-----------------|-------------|------|----------------|-------|-------------|------------------|-----------------|--|
| 1946 | 202 | 229 | 431 | 62 | 82 | 144 | 264 | 311 | 5 7 5 | |
| 1946 as of 12/1/52 | 178 | 196 | 374 | 86 | 115 | 201 | 264 | 311 | 575 | |
| 1947 | 250 | 256 | 506 | 386 | 299 | 685 | 636 | 555 | 1191 | |
| 1947 as of 12/1/52 | 195 | 220 | 415 | 441 | 335 | 776 | 636 | 555 | 1191 | |
| 1948 | 482 | | 888 | 274 | 179 | 453 | 756 | 000 | 1341 | |
| 1948 as of 12/1/52 | 288 | 258 | 546 | 468 | 327 | 795 | 7 56 | 585 | 1341 | |
| 1949 | 404 | 381 | 785 | 366 | 235 | 601 | 770 | 616. | 1386 | |
| 1949 as of 12/1/52 | 366 | 334 | 700 | 404 | 282 | 686 | 770 | 616 | 1386 | |
| 1950 | 496 | | 957 | 258 | 231 | 489 | 754 | 692 | 1446 | |
| 1950 as of 12/1/52 | 393 | 388 | 781 | 361 | 304 | 665 | 754 | 692 | 1446 | |
| 1951 | 432 | 438 | 870 | 337 | 205 | 542 | 769 | 643 | 1412 | |
| 1951 as of 12/1/52 | 379 | 377 | 756 | 390 | 266 | 656 | 769 | 643 | 1412 | |
| | | | | | | | | | | |

TABLE 3
Important Diseases
Number of Cases Reported Each Year

| Y | ear | Tuberculosis | Typhoid | Diphtheria | Smallpox | Scarlet Fever | Meningitis | Poliomyelitis | Spotted Fever | Measles |
|--|-----|---|--|--|---|---|---|--|---|--|
| 1920 1921 1922 1923 1924 1925 1926 1927 1928 1929 1930 1931 1932 1933 1934 1935 1938 1939 1940 1941 1942 1943 1944 1945 1946 | | 863 568 368 604 648 620 528 463 448 536 534 579 568 465 638 432 497 486 402 386 508 373 409 547 720 504 425 | 241 187 144 159 130 244 117 108 133 371 120 137 142 184 136 81 123 96 80 57 32 26 15 23 16 45 24 12 12 13 13 13 13 13 13 13 13 14 15 16 16 17 17 18 18 18 18 18 18 18 18 18 18 | 269 412 426 456 548 329 208 182 231 142 77 105 32 106 178 145 85 62 50 86 117 133 86 70 102 80 58 51 71 28 | 1,066 1,466 636 732 950 376 395 575 853 547 379 129 142 33 19 749 762 898 314 55 84 3 7 | 891 620 676 843 1,040 1,337 2,065 2,209 846 1,139 1,355 1,223 868 612 628 1,975 3,579 1,328 1,000 1,036 1,044 1,047 697 690 1,399 698 344 453 587 554 465 | 19 12 23 21 16 12 42 165 188 149 62 31 18 10 22 35 48 23 17 6 16 10 12 31 42 26 18 17 | 25 26 47 16 182 41 12 22 65 7 20 58 9 13 321 7 12 31 14 6 108 33 13 26 38 86 129 26 63 95 47 | 26 26 58 51 47 34 37 38 32 23 34 100 68 74 125 65 31 12 32 32 107 45 28 6 6 3 112 125 155 165 175 175 175 175 175 175 175 175 175 17 | 4,491 2,561 67 2,535 6,049 486 2,596 1,372 840 4,308 664 1,634 5,476 2,178 2,105 7,397 457 656 3,405 7,498 1,310 951 3,150 5,767 3,798 493 2,130 5,031 2,575 3,806 1,833 |
| $\frac{1950}{1951}$ | | 334 | 12 | 26 | ŏ | 485 | 16 | 135 | 10 | 2,634 |

| DISEASES | 1948 | 1949 | 1950 | 1951 |
|------------------------------------|-------|-------|-------|-------|
| Chickenpox | 2,616 | 2,777 | 1,786 | 2,493 |
| Diphtheria | 71 | 28 | 35 | 26 |
| Dysentery, Amoebic | | 1 | 8 | |
| Dysentery, Bacilliary | 2 | 8 | 2 | 1 |
| Dysentery, Unclassified | | | 1 | |
| Encephalitis | 2 | 11 | 1 | 5 |
| Erysipelas | 14 | 12 | 4 | 3 |
| Gonorrhea | 244 | 186 | 170 | 144 |
| Influenza | 470 | 205 | 5,184 | 1,621 |
| Measles | 2,575 | 3,806 | 1,833 | 2,634 |
| Measles (German) | 116 | 1,679 | 250 | 741 |
| Meningitis, Epidemic | 13 | 16 | 10 | 16 |
| Mumps | 2,891 | 753 | 702 | 2,675 |
| Pneumonia | 262 | 100 | 34 | 4 |
| Poliomyelitis, Epidemic | 63 | 95 | 47 | 135 |
| Rocky Mountain Spotted Fever | 3 | 12 | 15 | 10 |
| Scarlet Fever & Septic Sore Throat | 587 | 554 | 465 | 485 |
| Smallpox | 1 | 1 | | |
| Syphilis | 633 | 361 | 219 | 172 |
| Trachoma | 104 | 1 | 74 | 10 |
| Tuberculosis | 720 | 504 | 425 | 334 |
| Tularemia | 13 | 35 | 31 | 16 |
| Typhoid | 12 | 13 | 12 | 12 |
| Undulant Fever | 4 | 12 | 18 | 9 |
| Whooping Cough | 339 | 105 | 614 | 481 |

TABLE 5 POLIOMYELITIS

By Sex and Age Groups and Month of Onset

| | | | - Ju - 60 | , 2011 | | . 90 - | 194 | В | | | 31 | | | | |
|----------------|-----|-----|-----------|--------|-----|--------|------|-----|-----|-----|-----|-----|----------------|----------|-------|
| Age | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | T _O | tal F | Total |
| 0- 9 | 1 | 3 | 3 | 1 | 1 | 1 | 1 | 4 | 2 | 8 | 4 | 2 | 13 | 18 | 31 |
| 10-19 | 1 | 2 | | | | | 2 | 3 | 6 | 4 | | | 13 | 5 | 18 |
| 20-29 | | | | | | | 1 | 2 | 3 | 3 | 1 | | 2 | 8 | 10 |
| 30-39 | 1 | | | | | | | | 2 | | | | 1 | 2 | 3 |
| 40 & over | | | | | | | | 1 | | | | | 1 | | 1 |
| Totals | 3 | 5 | 3 | i | 1 | 1 | 4 | 10 | 13 | 15 | 5 | 2 | 30 | 33 | 63 |
| | | | | | | | 1949 |) | | | | | | | |
| 0-9 | | | 5 | | | | 2 | 8 | 16 | 9 | 3 | 1 | 27 | 17 | - 44 |
| 10-19 | 1 | | | | | | 3 | 6 | 8 | 2 | 3 | | 11 | 12 | 23 |
| 20-29 | | | | | | | 1 | 7 | 2 | 5 | | | 12 | 3 | 15 |
| 30-39 | | | | | | 1 | 1. | | 6 | | 2 | 1 . | 8 | 3 | 11 |
| 40 & over | | | | | | | | 2 | | | | | 1 | 1 | 2 |
| Totals | 1 | • | 5 | | | 1 | 7 | 23 | 42 | 16 | 8 | 2 | 59 | 36 | 95 |
| | | | | | | | 1950 |) | | | | | | | |
| 0-9 | | 1 | 1 | | | 1 | 5 | 7 | 4 | 2 | 6 | 1 | 20 | 8 | 28 |
| 10-19 | | | | | | | 1 | 1 | 2 | 3 | 4 | | 4 | 7 | 11 |
| 20-29 | | | | | | | | 3 | | 1 | | | 1 | 3 | 4 |
| 30-39 | | | 1 | | | | | 1 | | | | | 1 | 1 | 2 |
| 40 & over | | | 1 | | | | | | 1 | | | | 1 | 1 | 2 |
| Totals | | 1 | 3 | | | 1 | 6 | 12 | 7 | 6 | 10 | 1 | 27 | 20 | 47 |
| | | | | | | | 1951 | | | | | | | | |
| 0- 9 | | | | 1 | | | 3 | 15 | 31 | 15 | 9 | 1 | 49 | 26 | 75 |
| 10-19 | | | 1 | | 1 | | 1 | 6 | 10 | . 5 | 7 | | 16 | 15 | 31 |
| 20-29 | | | | | 1 | | | 2 | 13 | 2 | 1 | 2 | 7 | 14 | 21 |
| 30-39 | 1 | | | | | | 1 | | | | | | 2 | | 2 |
| 40 & over | 1 | | | • | | | | 1 | | | | | 1 | 1 | 2 |
| Age unknown | | | | | | | | | 3 | | | 1 | 1 | 3 | _ 4 |
| Totals | 2 | | 1 | 1 | 2 | | 5 | 24 | 57 | 22 | 17 | 4 | 76 | 59 | 135 |

TABLE 6
SYPHILIS
By Color, Sex, Age Groups and Stage of Disease
1948

| | | | | | | | | 194 | 18 | | | | | | | | | | | |
|-------------------------|--------------------------|----------|------------|----------------|----------|--------------------------|----------|------------|---------|----------|--------------------------|---------|------------|----------|----------|--------------------------|----------|----------|---------|---------|
| Male | | WH | ITE | | Fen | nale | | | | | Ma | le | NC | N-V | VHI | ſΕ | Fem | ale | | |
| | Primary and Secondary | Tertiary | Congential | Unknown | Total | Primary and Secondary | Tertiary | Congential | Unknown | Total | Primary and Secondary | | Congential | Unknown | Total | Primary and Secondary | Tertiary | - | Unknown | Total |
| | E O | | <u></u> | - - | Ξ | A S | T | | | Τ_ | e s | | <u> </u> | <u> </u> | I | P W | T | <u> </u> | | T |
| | | | | | | | | 194 | 8 | _ | | | | | | | | | | |
| 0-14 | 21 | | 1 | | 1 | 1 | 0 | 4 | | 5 | 1 | , | 6 | 1 | 8 | 2 | 20 | 8 | | 10 |
| 15-24 | 21 | 4 | 2 | 1 | 28 | 9 | 9 | 2 | | 20 | 17 | 6 | 1 | 1 | 25 | 24 | 26 | | 1 | 51 |
| 25-39 | 38 | 20 | 1 | 1 | 60 | 15 | 54 | | | 69 | 6 | 13 | 1 | 2 | 19 | 7 | 34 | | 1 | 42 |
| 40-59 | 12 1 | 57 22 | | | 69 23 | 3 | 36 | 1 | 1 | 40 12 | | 15 5 | 1 | 3 | 19 5 | 1 | 12 | | 1 | 14 5 |
| 60 & over | 11 | 25 | | 2 | 38 | 1 | 11 14 | 1 | 1 | 16 | 4 | 6 | | 1 | 11 | 2 | 5 26 | 1 | 2 | 31 |
| Age unknown | | _ | | | | | | | | | | | | | | | | | | |
| TOTALS | 83 | 128 | 4 | 4 | 219 | 29 | 124 | 7 | 2 | 162 | 28 | 45 | 8 | 6 | 87 | 36 | 103 | 9 | 5 | 153 |
| | | | | | | | | 194 | 10 | | | | | | | | | | | |
| 0-14 | | | 4 | | 4 | | 1 | 2 | 19 | 3 | | | 2 | | 2 | - 1 | 1 | 2 | | 4 |
| 15-24 | 6 | 6 | 7 | | 12 | 4 | 10 | 2 | | -16 | 3 | 6 | 1 | | 10 | 4 | 12 | _ | 1 | 17 |
| 25-39 | 8 | 26 | 1 | | 35 | 8 | 32 | _ | | 40 | 1 | 11 | • | | 12 | | 27 | | 1 | 28 |
| 40-59 | 9 | 57 | • | 1 | 67 | 1 | 28 | | | 29 | 1 | 4 | | | 5 | 1 | 1 | | • | 2 |
| 60 & over | 2 | 23 | | _ | 25 | _ | 2 | | | 2 | | 4 | | | 4 | | 3 | | | 3 |
| Age unknown | 1 | 16 | | | 17 | 1 | 12 | | 3 | 16 | | 4 | | 1 | 5 | | 4 | | | 4 |
| TOTALS | 26 | 128 | 5 | 1 | 160 | 14 | 85 | 4 | 3 | 106 | 5 | 29 | 3 | 1 | 38 | 6 | 48 | 2 | 2 | 58 |
| 1011125 | 20 | 120 | | Î | 100 | | - | · | | 100 | | | | • | | | | _ | _ | |
| | | | | | | | | 19 | 50 | | | | | | | | | | | |
| 0-14 | | | | | | | | | | | | | 1 | | 1 | | 1 | 2 | •- | 3 |
| 15-24 | 5 | 3 | | | 8 | 1 | 6 | 1 | | 8 . 15 | 1 | 5 | | | 6 | | 1.4 | . 1 | 1 | 24 |
| 25-39 4 0 -59 | 9 | 6 15 | 1 | 4 | 19 20 | 3 | 11 18 | •- | 1 | 19 | 5 1 | 7 11 | | 1 | 12 13 | 8 | 14 7 | | 1 2 | - |
| 40-59 60 & over | 2 | 8 | | 1 | 11 | | 9 | | | 9 | 1 | 1 | | 1 | 2 | | | | 2 | |
| Age unknown | 2 | 5 | | 1 | 8 | 2 | 3 | | | 5 | | 1 | | | 1 | | 3 | | | 3 |
| | | | _ | | | | | | | | | | 4 | | | | _ | -0- | 2 | |
| TOTALS | 21 | 37 | 1 | 7 | 66 | 7 | 47 | 1 | 1 | 56 | 8 | 25 | 1 | 1 | 35 | 12 | 25 | 3 | 3 | 43 |
| | | | | | | | | 10 | ٠. | | | | | | | | | | | |
| 0-14 | | | | | | | 1 | 19 | | 1 | | 1 | 1 | | 2 | | | 1 | | 1 |
| 15-24 | •- | 1 | | 1 | 2 | 1 | 3 | 2 | | 1 6 | | 1 4 | 1 | | 2 6 | | . 6 | | | . 1 |
| 25-39 | 1 | 6 | | 4 | | 4 | 13 | 2 | | 19 | | 7 | 1 | | 8 | | | | 1 | |
| 40-59 | 1 | 18 | | 3 | | 3 | 10 | _ | | 13 | | 8 | | | 8 | | | | 1 | 5 |
| 60 & over | | 9 | | 0 | 9 | | 5 | | | 5 | | 3 | | | 3 | | | | | |
| Age unknown | 1 | 4 | | 1 | | | 4 | 1 | | - | | 3 | | | 6 | | | | - | |
| TOTALS | 3 | 38 | | 9 | 50 | 8 | 36 | _ | | | 4 | 26 | 2 | 1 | 33 | 5 | 25 | 5 2 | : 4 | 36 |

TABLE 7 IMMUNIZATION MATERIALS DISTRIBUTED

| By State Board of Health | | |
|--------------------------------------|---|--------|
| 2711 | 1950-1951 (quantities sufficient of number list | |
| Smallpox Vaccine | 9,015 | 11,880 |
| Rocky Mountain Spotted Fever Vaccine | | 293 |
| Pertussis | 190 | . 120 |
| Diphtoxoid | | 893 |
| Dipthussis | | 15 |
| Diptheria, Pertussis, Tetanus | | 284 |
| Schick Test | | 570 |
| Typhoid | | 6,291 |
| Botulinus Antitoxin | | |

TUBERCULOSIS CONTROL



Chest X-ray Survey

A review and critical evaluation of the Chest X-ray Survey program during the past biennium demonstrates very little definite improvement over the previous biennium. However, it can be shown that steps have been taken to place the program on a level equal to, or possibly exceding, previous recommendations.

As emphasized in previous reports, inadequate personnel and equipment were cited as the reasons why it was impossible to attain the desired high participation, and the assurance that all persons X-rayed and considered to have possible chest disease, sought and obtained the recommended medical supervision. The following paragraphs will summarize the efforts made to attain the desired objective.

During the past biennium an additional Mobile X-ray Unit was obtained, and adapted to take 4 x 5 steroscopic chest films. Utilizing the two Mobile Units and the Portable Unit to their fullest advantage will make it possible to conduct a more thorough survey, more rapidly, throughout the entire state.

To assist in the planning, promotion and community organization, three Health Educators are now actively engaged in this phase of the program. On two occasions, during the later part of the biennium, in-service training courses in community organization were conducted by United States Public Health Service consultants specifically trained and experienced in this particular field. Also, to form the nucleus for community organizations throughout the state and assist in the dissemination of information, a State Chest X-ray Survey Advisory Committee was formed by the Montana Health Planning Council. To date, invaluable service has been rendered by this committee in the state-wide planning for the survey.

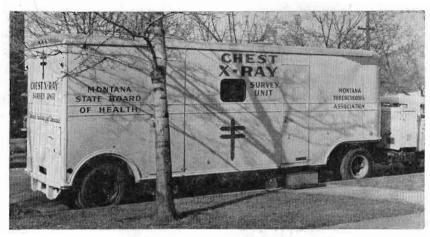
For those areas without public health nursing service, and to assist in the confirmatory 4×5 stereoscopic procedure, a field nurse has been added to the staff. Through her efforts it is anticipated that all persons with suspected chest abnormality will be placed under the medical care and supervision that is needed. With the inclusion of the 4×5 stereoscope film, suspects will be referred to their private physicians on a more reliable basis.

Throughout the entire biennium, the Montana Tuberculosis Association has cooperated wholeheartedly. In order to clarify the functions of both the Montana Tuberculosis Association and the Montana State Board of Health, an agreement was drawn, definitely stating the responsibilities of each agency. The Montana Tuberculosis Association also contributed materially in the purchase of new equipment and, within the scope of the agreement, will in the future provide specific items and services considered necessary to conduct a successful chest X-ray Survey in Montana.

Although only immediate objectives have been mentioned so far, a broader objective has been injected into the scope of benefits that are hoped will be derived from the Chest X-ray Survey. In addition to the early discovery of tuberculosis, lung cancer, heart disease and other diseases of the chest, it is hoped that the efforts expended throughout the state in forming community organizations will result in the formation of a permanent group of citizens who are better informed on health matters, and are sufficiently concerned to continue active in the interests of better public health. If this can be accomplished it is possible that those services necessary to provide the highest level of health and well being will be made possible through their collective action.

A more detailed account of the Chest X-ray Survey activities during the past biennium illustrates two important facts: (1) The percentage of adults taking advantage of the opportunity for a Chest X-ray is much too low, and (2) the percentage of persons referred to their private physician with possible chest pathology, and who are subsequently never heard from, is a great deal too high.

(1) During 1950, 1951 and through July of 1952, 138,519 persons were



NEW MOBILE UNIT—The above mobile type x-ray unit was purchased jointly by the Montana Tuberculosis Association and the State Board of Health and placed in operation in January of 1951 in the continuing search for unsuspected cases of tuberculosis.

X-rayed by the Mobile Units. The percentage of participation by adults was 39% in 1950, 41% in 1951 and 37% for the first six months of 1952. (See Tables I, II, and III) In most cases the X-ray equipment was made available for a sufficiently long period of time to X-ray the entire adult population, which would have included approximately 358,000 persons.

Although not included in the Tables (I, II and III) it should also be noted that of the 138,519 persons X-rayed from 1950 to 1952, 60% of these had previously been X-rayed.

Adding together the two facts shown above, low percentage participation, together with the high percentage of repeaters, it is obvious that the results from the standpoint of XI-raying the entire adult population are even worse than the statistics would indicate.

(2) Tabulating the results of the surveys conducted during the past two years would indicate that considerable benefit has been derived in terms of the numbers of cases of tuberculosis, heart disease, cancer, and other pathology discovered. Again, however, there is a major discrepancy that is of marked importance, and has far-reaching implications.

As shown by Table IV, in 1950, 1,195 persons were referred by the Survey to their private physicians. Of this number, a final and complete diagnosis was obtained on only 625, or 52%, and of the 570 on whom a final diagnosis was never received, 306 of these were considered to possibly have tuberculosis.

Again in 1951, completed diagnosis were received on only 991 or 65.8% of a total of 1,506 persons referred to their private physicians for a more complete examination. (Table V)

From the figures quoted above and shown in more detail in Tables IV and V, it is obvious that there is a great deal to be desired in this phase

Δ

of the program. Although not always possible to determine where the inadequacy exists, inability to complete the follow-up can usually be allotted to failure of the patient to see his private physician, or the inability to obtain the results of the examination from the private physicians.

Provided the personnel, mentioned in the opening paragraphs of this report, can remain in the program, and sufficient funds are provided to operate at the present level, at least a fair measure of success may be expected for the future.

TUBERCULOSIS CASE SUPERVISION





Although more or less overshadowed by the better known, more widely publicized Chest X-ray Survey Program, case supervision activities of the Tuberculosis Control Program should not be ignored and should be given the recognition it deserves.

This major phase or function of the tuberculosis control program is responsible for (1) the collection and recording of pertinent information on all reported and known cases of tuberculosis residing in the state, and (2) the prevention of the spread of this communicable disease by the enforcement of existing laws, rules and regulations.

Performance of the former function is dependent upon the maintenance of a confidential central case register of all known cases of tuberculosis. Following receipt of a reported case of tuberculosis, systematic, periodic queries are made to accurately evaluate the clinical status of the case and its epidemiological significance. By means of correspondence, and through the cooperation of local public health personnel, particularly public health nurses, an atempt is made to obtain accurate up-to-date information on all known tuberculosis cases, until such a time that their disease is inactive and they are no longer capable of communicating the disease to others.

During the period July 1, 1951 through June 30, 1952, 338 new case of tuberculosis were reported to the central case register. During this same interval, approximately 6,000 queries, in the form of personal letters, questionnaires and special report forms were sent to private physicians, public health officers and nurses, and various institutions and hospitals in Montana and other states. These 6,000 queries represent the efforts made to obtain

information on approximately 2,202 cases handled during this period, and includes 338 newly reported cases, as well as the previously known cases carried in the current register.

Despite the constant efforts of physicians and nurses, 176 active or questionable active cases were being cared for in private homes on June 30, 1952. Although a small number of these cases would probably not be benefited by hospitalization, and, if under proper isolation and care at home, would not constitute a hazard to others; the number with active and potentially communicable tuberculosis being cared for outside of hospitals is still too large. This number combined with an estimated 350 to 400 unknown cases of active tuberculosis in the state would certainly serve to contradict any existing opinions that the tuberculosis problem is no longer important. Never has the need been greater for more adequate hospitalization and closer supervision of tuberculosis cases than at the present time. A progressive decline in the death rates, together with premature and misleading publicity on curative drugs and immunization have been responsible for a dangerous complacency regarding the existing problem.

Additional evidence can be given that will support the need for a greater attempt to discover tuberculosis as well as hospitalize and care for it properly, in the fact that of the 338 newly reported cases of tuberculosis in Montana from June 1, 1951 to July 30, 1952, 25 were first reported as deaths, and 67 were unknown to the health department until admitted to the hospital.

The most significant problems attending this phase of the tuberculosis control program are dependent upon many things, the most important of which are the following:

- (1) Inadequate local health facilities.
- (2) Insufficient cooperation and exchange of information between private physicians, the hospitals and sanatoria and public health personnel.
- (3) The active cases being cared for outside hospitals, particularly the recalcitrant patient, and the existing laws, rules and regulations pertaining to tuberculosis.

Doing a thorough and complete job of case supervision, not only collecting and recording data on the individual cases, but providing adequate nursing service to the patient before, during and after his period of hospital treatment, will probably be an impossibility without the extension of adequate public health service coverage to include the entire state.

The establishment of a system of records and free exchange of information between the private physician, the sanatorium and the health department is a necessary requisite for the most efficient and effective handling of the tuberculosis patient from the time of diagnosis until he is no longer a community hazard.

The problems arising from the care of the active cases out of the hospital can also be at least partially remedied by the provision of public health services for the entire state. The recalcitrant patient constitutes an individual problem and its solution is not simple. Even if sufficient beds were available in the State of Montana to care for those willing to go for treatment, laws, rules and regulations are limited to the extent that an unwilling tuberculosis patient existing as a hazard to the community might be transported to a sanitorium, but no provision is made to keep him under isolation. Although mentioned as one of the problems existing in the tuberculosis control program, it is probably useless to discuss the recalcitrant patient, as the application of custodial care would be impossible without adequate beds, and even with the proposed increase, it is doubtful that the capacity will be sufficient to care for those willing to accept treatment.

During the past biennium, definite new plans were not instituted, other than doing the work more throughly with the facilities available. In the future, it is hoped that at least improved reporting of cases and a freer exchange of information between private physicians, sanatoriums, and public health personnel can be instituted.

TABLE I RESULTS OF CHEST X-RAY SURVEY OPERATIONS FOR 1950 IN 18 MONTANA COUNTIES

| C | OUNTY | TOTAL 1950 Population | Adult Population* | Number X-Rayed | % Adult Population X-Rayed |
|-----|-----------|--------------------------|----------------------|-------------------|----------------------------------|
| 1. | Wibaux | 1,904 | 1,390 | 570 | 41 |
| 2. | Dawson | 0.000 | 6,597 | 2,317 | 35 |
| 3. | Richland | . 10,343 | 7,550 | 3,056 | 40 |
| 4. | Sheridan | 6,623 | 4,835 | 2,514 | 52 |
| 5. | Daniels | . 3,928 | 2,867 | 1,028 | 36 |
| 6. | Roosevelt | . 9,527 | 6,955 | 3,238 | 47 |
| 7. | Valley | . 11,320 | 8,264 | 4,142 | 50 |
| 8. | Phillips | 6,348 | 4,634 | 2,049 | 44 |
| 9. | Blaine | . 8,473 | 6,185 | 2,707 | 44 |
| 10. | Lincoln | 8,672 | 6,331 | 1,614 | 25 |
| 11. | Flathead | . 31,412 | 22,931 | 4,527 | 20 |
| 12. | Sanders | . 6,926 | 5,056 | 1,581 | 31 |
| 13. | Glacier | 9,636 | 7,034 | 2,149 | 31 |
| 14. | Pondera | 6,429 | 4,683 | 1,878 | 40 |
| 15. | Toole | . 6,859 | 5,007 | 1,732 | 35 |
| 16. | Liberty | 2,168 | 1,583 | 566 | 36 |
| 17. | Hill | 14,281 | 10,425 | 5,192 | 50 |
| 18. | Chouteau | 6,908 | 5,043 | 1,792 | 36 |
| | TOTAL | 160,795 | 117,370 | 42,652** | 39 |

Over twelve years of age. Does not include special projects—University, etc.

TABLE II RESULTS OF CHEST X-RAY SURVEY OPERATIONS FOR 1951 IN 26 MONTANA COUNTIES

| | ION 1331 | FOR 1991 IN 28 MONTANA COUNTES | | | | | | | | | | | |
|-----|---------------|--------------------------------|----------------------|-------------------|----------------------------------|--|--|--|--|--|--|--|--|
| C | OUNTY | TOTAL 1950 Population | Adult Population* | Number X-Rayed | % Adult Population X-Rayed | | | | | | | | |
| 1. | Mineral | 2,062 | 1,505 | 841 | 56 | | | | | | | | |
| 2. | Ravalli | 13,021 | 9,505 | 4,225 | 44 | | | | | | | | |
| 3. | Missoula | 34,982 | 25,537 | 13,678 | 53 | | | | | | | | |
| 4. | Lake | 13,767 | 10,050 | 4,077 | 41 | | | | | | | | |
| 5. | Granite | 2,765 | 2,018 | 684 | 34 | | | | | | | | |
| 6. | Jefferson | 4,005 | 2,924 | 1,165 | 40 | | | | | | | | |
| 7. | Madison | 5,906 | 4,311 | 1,362 | 32 | | | | | | | | |
| 8. | Beaverhead | 6,417 | 4,684 | 1,964 | 42 | | | | | | | | |
| 9. | Meagher | 2,039 | 1,488 | 396 | 26 | | | | | | | | |
| 10. | Broadwater | 2,887 | 2,108 | 492 | 23 | | | | | | | | |
| 11. | Wheatland | 3,162 | 2,308 | 967 | 42 | | | | | | | | |
| 12. | Musselshell | 5,392 | 3,996 | 1,401 | 32 | | | | | | | | |
| 13. | Deer Lodge | 16,529 | 12,066 | 3,400 | 28 | | | | | | | | |
| 14. | Golden Valley | 1,337 | 976 | 414 | 42 | | | | | | | | |
| 15. | Garfield | 2,172 | 1,585 | 597 | 38 | | | | | | | | |
| 16. | McCone | 3,258 | 2,378 | 707 | 30 | | | | | | | | |
| 17. | Big Horn | 9,827 | 7,171 | 2,843 | 40 | | | | | | | | |
| 18. | Petroleum | 1,026 | 749 | 282 | 37 | | | | | | | | |
| 19. | Gallatin | 21,902 | 15,988 | 6,687 | 42 | | | | | | | | |
| 20. | Fergus | 14,015 | 10,230 | 4,521 | 44 | | | | | | | | |
| 21. | Treasure | 1,402 | 1,023 | 390 | 38 | | | | | | | | |
| 22. | Teton | 7,232 | 5,279 | 2,628 | 49 | | | | | | | | |
| 23. | Carbon | 10,241 | 7,475 | 2,311 | 31 | | | | | | | | |
| 24. | Rosebud | 6,570 | 4,796 | 2,259 | 47 | | | | | | | | |
| 25. | Judith Basin | 3,200 | 2,336 | 845 | 36 | | | | | | | | |
| 26. | Chouteau | 6,974 | 5,091 | 178 | 3 | | | | | | | | |
| | TOTAL | 202,090 | 147,577 | 59,314** | 40 | | | | | | | | |

3

* Over twelve years of age.

** Does not include special projects, University, etc.
61,796 Total Taken—Included special projects, University, etc.

TABLE III RESULTS OF CHEST X-RAY SURVEY OPERATIONS FROM JAN. 1952 THROUGH JULY 1952

| | 111011 /11111 | 1002 1111100 | , | | % Adult |
|-----|--|--------------------------|-------------------|-------------------|-----------------------|
| (| 2. Stillwater 3. Powell 4. Park 5. Custer 6. Richland 7. Powder River 8. Roosevelt 9. Wibaux 9. Dawson 9. Prairie 9. Fallon 9. Yellowstone | TOTAL 1950 Population | Adult Population* | Number X-Rayed | Population X-Rayed |
| 1. | Sweet Grass | 3,621 | 2,643 | 890 | 34 |
| 2. | Stillwater | 5,416 | 3,952 | 1,398 | 35 |
| 3. | Powell | 6,301 | 4,429 | 1,479 | 33 |
| 4. | Park | 11,999 | 8,759 | 3,325 | 38 |
| 5. | Custer | 12,661 | 9,242 | 2,961 | 32 |
| 6. | Richland | 10,366 | 7,567 | 3,737 | 49 |
| 7. | Powder River | 2,693 | 1,965 | 537 | 27 |
| 8. | Roosevelt | 9,580 | 6,993 | 2,184 | 31 |
| 9. | Wibaux | 1,907 | 1,392 | 602 | 43 |
| 10. | Dawson | 0.000 | 6,636 | 3,246 | 49 |
| 11. | Prairie | 2,377 | 1,735 | 856 | 49 |
| 12. | Fallon | 3,660 | 2,671 | 1,082 | 41 |
| 13. | Yellowstone | | 40,789 | 14,256 | 35 |
| | TOTAL | 135,548 | 98,773 | 36,553** | 37 |

* Over twelve years of age.
** Does not include special projects.

TABLE IV

SUMMARY OF CHEST X-RAY SURVEY FINDINGS FOR 1950*

Total Films Taken.....42,652

1,195 persons, or 2.8% referred for further study by private physician. * (In eighteen Montana counties)

| | I MINIATURE FILM IMPRESSION | | II INAL al equal | to III | | NOSIS | Case | | FINAL OSITION low-Up |
|----|-----------------------------------|----------|------------------------|---------------|------------|-------|------|---------------|----------------------------|
| | Total Number | 0 Neg | TB | TB Suspect | 3 Other | | | A Complete | B |
| 1. | TUBERCULOSIS 197 | 9 | 76 | 9 | 8 | 0 | 2 | 104 | 93 |
| 2 | TUBERCULOSIS SUSPECT 424 | 83 | 79 | 8 | 25 | 3 | 13 | 211 | 213 |
| 3. | OTHER PATHOLOGY 266 | 44 | 5 | 6 | 83 | 0 | 8 | . 146 | 120 |
| 4. | POSSIBLE LUNG TUMOR 50 | 1 | 0 | 1 | 0 | 15 | 0 | 17 | 33 |
| 5. | CARDIO VASCULAR DISEASE258 | 18 | 0 | 2 | 8 | 0 | 119 | 147 | 111 |
| | TOTALS1,195 | 155 | 160 | 26 | 124 | 18 | 142 | 625 | 570 |

Column I

Column II

The figures listed in this column represent the total number of persons referred to their private physician on the basis of a miniature survey film.

Following the recommended studies by the private physician, the completed diagnosis was returned on 625 persons (Column IIIA) and are listed according to the final diagnosis.

This column indicates the total persons and number in each diagnostic category upon whom a final diagnosis was never received. Column IIIB

TABLE V

SUMMARY OF CHEST X-RAY SURVEY FINDINGS FOR 1951*

Total Films Taken.....59,314 1,506 persons, or 2.5%, referred to private physicians for further study.
*(In 26 Montana counties)

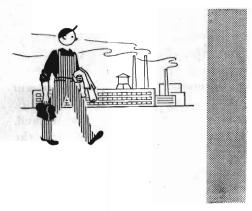
| | MINIATURE FILM | FINAL | (T) . 1 | II | | DIAGI | VOSIS | | | FINAL |
|----|---------------------------|-----------------|----------------|----------------------|--------------|---------------|-------|-----------|--------------|------------------|
| _ | IMPRESSION | | (Total | equal | to III A | .) | | | Case | Follow-Up |
| | | Total Number | $_{\rm Neg}^0$ | $^{1}_{\mathrm{TB}}$ | TB | Other Path | Lung | Cardio | A | В |
| 1. | TUBERCULOSIS | 181 | 8 | 77 | Suspect 6 | 19 | 5 | v asculai | 118 | Incomplete 63 |
| 2. | TUBERCULOSIS SUSPECT | 399 | 70 | 90 | 43 | 48 | 1 | 24 | 276 | 123 |
| 3. | OTHER PATHOLOGY | 481 | 59 | 17 | 4 | 178 | 10 | 41 | 309 | 172 |
| 4. | POSSIBLE LUNG TUMOR | 55 | 8 | 0 | 0 | 3 | 11 | 9 | 31 | 24 |
| 5. | CARDIO VASCULA DISEASE | AR 390 | 28 | 2 | 0 | 3 | 0 | 224 | 257 | 133 |
| | TOTALS | 1,506 | 173 | 186 | 53 | 251 | 27 | 301 | 991 65.8% | 515 34 2% |

The figures listed in this column represent the total number of persons referred to their private physician on the basis of a miniature survey film. Column I

Following the recommended studies by the private physician, the completed diagnosis was returned on 625 persons (Column IIIA) and are listed according to the final diagnosis.

This column indicates the total persons and number in each diagnostic category upon whom a final diagnosis was never received. Column II

Column IIIB



INDUSTRIAL HYGIENE

The industrial hygiene program has as its objective the maintenance and improvement of the health of people employed in industry.

There are two approaches. One has to do with the individual exposed to the risk, and is primarily medical. The other is the control of the environment and is principally chemical and engineering. These two elements need to be fully coordinated because it is seldom that an industrial hygiene problem can be studied or solved through only one of the approaches. Since the establishment of the Industrial Hygiene Division in 1939 when there was a medical director, the principle of medical participation has been recognized, but for the past ten years, the medical component of Industrial Hygiene work was secured through the State Board of Health's Executive Officer. Realizing the inadequacy of this provision, the Board of Health, in September 1950, made the Industrial Hygiene program a portion of the Disease Control Division, to insure better medical participation in Industrial Hygiene problems.

Activities for attaining the objective of safeguarding the health of the worker have included:

Studies and surveys of environmental hazards, to determine conditions which may be detrimental to industrial workers' health;

Studies of known occupational diseases, and means to control or eliminate them;

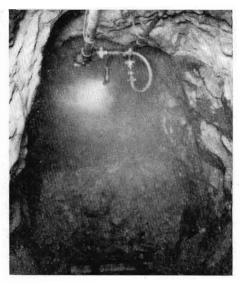
Consultation to industry on technical aspects of industrial health problems;

Maintaining laboratory service for analysis of samples collected in industry to establish their toxicity or safe levels;

Giving lectures and talks before professional groups including management representatives, labor representatives, safety directors, and the medical profession;

Making chemical analysis of body fluids and tissues as an aid to diagnosis in industrial problems and in toxicological problems;

Continuous studies and appraisals of operating procedures.



PROTECTING MINERS—Dust and gases liberated by blasting in dead-end mine openings are suppressed by a mist of finely sprayed water and compressed air. The spray is put into operation shortly before the blast occurs so that broken rock and gases are thrown into the mist and are wetted down.

It is the plan to continue the Industrial Hygiene program as part of the Division of Disease Control to insure the closest integration of activities in the medical, engineering, and chemical fields. Every effort will be made to recruit qualified staff. Until such time as staff are secured, assistance will be requested of the Industrial Hygiene Field Station of the Public Health Service at Salt Lake City. Obviously, this will permit only a limited program confined to the most urgent problems. industrial hygiene survey of Montana industrial establishments has not been undertaken for some ten years, it is time that this is done again. This will be undertaken as soon as staff are secured.

During the biennium, changes were made in the Industrial Hygiene

laboratory to include the food and drug chemistry laboratory within the same physical facilities. The chemists of these two programs worked together cooperatively and supplemented each other during periods of heavy demand by the two programs.

Reporting of silicosis cases (third stage) has been continuing. This data is being obtained from three sources: (1) The Public Welfare Department, which is taken from the list of persons receiving silicosis benefits; (2) Tuberculosis Registry of the State Board of Health; and (3) the state hospital at Galen. A preliminary analysis shows that the number of cases reported has not changed appreciably since the last biennial report. There were approximately 650 cases in the last biennium and approximately 625 cases were reported this biennium. The statistical study has not been completed and it is hoped that it can be completed during the next two-year period.

Monthly reporting of absenteeism is being carried on by two companys: A. C. M. Company, Great Falls, and A. S. & R. Company, East Helena. These reports are analyzed. The results are sent to the respective companies.

Talks on various aspects of industrial health were presented to different groups in the state in this biennium. A paper entitled, "Effectiveness of Gauze Respirators for Use with Sulfuric Acid Mists," was given

to the Industrial Hygiene Section of the American Public Health Association meeting in St. Louis. Talks on industrial hygiene were presented to farm and labor institutes and meetings, including the Governor's second Safety Conference.

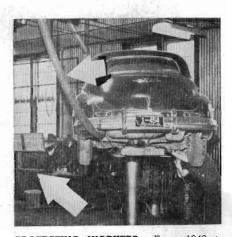
Laboratory & Field Analyses

A total of 403 chemical analyses were made in the laboratory on air, urine, blood, water, and dust samples. One-hundred-forty determinations were made on atmospheric contaminants in the field; seventy-eight determinations of physical conditions were made in the field. These field determinations were made with direct reading instruments.

Field Activity

A total of twenty-eight plants with approximately five thousand workers were serviced.

Industries covered included smelters, oil refineries, dry cleaning establishments, shoe stores, electrolytic refinery, lumbering and milling, diesel shops and phosphorus manufacturing plants.



PROTECTING WORKERS—From 1942 to 1952 accidental carbon monoxide poisoning cost the lives of 95 Montanans. The above picture shows a good way to avoid the dangers of carbon monoxide poisoning in a closed auto repair garage; a pipe to carry the car's exhaust outside; and a large fan (lower arrow) to bring in fresh air from the outside and keep it circulating freely in the closed garage.

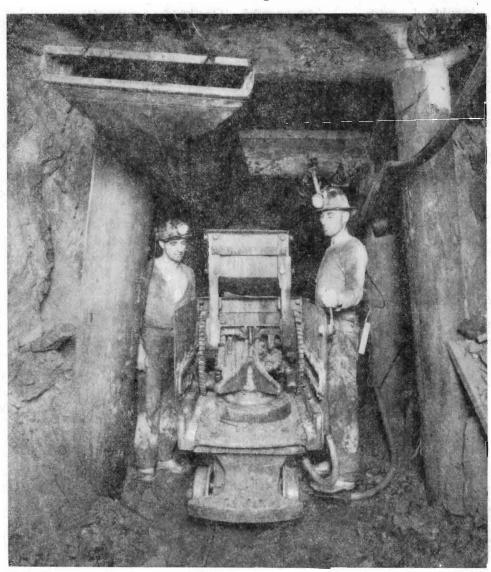
A fairly complete study was made of two large plants: the A. C. M. Co. reduction works at Great Falls and the Victor Chemical Company Elemental Phosphorus plant at Silver Bow. A number of samples and field determinations were made. This resulted in a number of recommendations for the improvement the environment ofworkers. In both instances agreement was reached with the company on carrying out the recommendations.

Studies were made in three uranium mines to determine the extent of radioactivity and possible hazardous exposure to

workers and visitors. In one instance, recommendations resulted in the installation of a ventilation system to keep the exposure to radioactivity from radon gas within safe limits. It will be necessary to make further studies of these and other mines in regard to radiation exposures.

Among the pieces of new field equipment obtained is an electrostatic precipitator used for collecting fume samples.

Occupational disease reporting, as has been true in previous years, is still far from satisfactory. Of the ten cases reported (excluding silicosis cases; four were due to arsine, two due to nitrogen oxides, one each due to lead, tetraethyl lead, phosgene dermatitis, and mercury), only three were reported by doctors using the regular occupational disease reporting form. The other cases were discovered through the Industrial Accident Board.



MINE VENTILATION—For the ventilation of dead-end mine openings, it is necessary to force air to the working place through air ducts, or large sized tubes. To prevent the cooler air striking the men's bodies, the air is discharged through an oblong opening, as shown above.

The Industrial Accident Board learned of these cases because five of them resulted in death. The problem is one of informing the medical profession of the need and value of making such reports.

Unfortunately, during the biennium, there was a serious shortage of staff for the Industrial Hygiene program. For half the biennium, medical participation had come from the Board's Executive Officer, since the position of Disease Control director was vacant for that period. A chemical engineer was available for only six months of the biennium; this required that most of the work of this section had to be carried by the chemist and staff loaned to the state by the Salt Lake City Industrial Hygiene Field Station of the U.S. Public Health Service.

The laboratory assisted the Montana Industrial Accident Board in determining the cause of the deaths of two men and the injury of another. The men had been using oxygen with acetylene in welding. By laboratory analyses it was found that the oxygen contained an appreciable amount of hydrogen which, when ignited, exploded.

During the biennium, a research grant was received from the National Cancer Institute to carry out a study to determine lung cancer incidence in certain Montana counties and an environmental study principally directed at the presence or absence of carcinogenic (cancer causing) substances in the atmosphere. While the research grant allowed for the employment of a full-time industrial hygiene engineer to carry out this aspect of the research program, the inability to secure a properly qualified engineer has postpond this activity. Other aspects of the research study are under way and the environmental phase will be undertaken as soon as personnel can be secured.

Summary of Industrial Hygiene Activities

| PLANT ACTIVITIES | |
|--|--|
| Total number of different plants served | |
| Total number of workers covered by services | |
| Total number of plant visits made 55 | |
| SOURCE OF SERVICE | |
| Self-initiated16 | |
| Requests from management, labor, private physicians, etc. 29 Total 45 | |
| GENERAL TYPE OF SERVICE GIVEN | |
| Plant surveys6 | |
| Plant surveys 6 Technical studies of Hazards 26 Other environmental services 1 | |
| Other environmental services1 | |
| Investigation of occupational diseases | |
| Follow-up on recommendations | |
| Miscellaneous services5 | |
| Total | |
| SPECIFIC SERVICES | |
| Number of laboratory analyses and examinations 403 | |
| Field determinations of atmospheric contaminants | |
| Field determinations of physical conditions | |
| Occupational diseases investigated | |
| Office inquiries on industrial health | |
| Ventilation plans examined or prepared | |
| Miscellaneous | |
| | |

OTHER ACTIVITIES

| Professional meetings | 5 |
|--------------------------|-----|
| Lectures and talks | 14 |
| Publications | 2 |
| Professional conferences | 29 |
| Literature distributed | 732 |
| Miscellaneous | 2 |

Summary of Laboratory and Field Analyses

| Dumman | , or Handraidi | , and riota rimary bob | |
|-----------------------|--------------------|------------------------|--------------------|
| Materials Analyzed | No. of Analyses | Materials Analyzed | No. of Analyses |
| Acid | . 12 | Mercury | 7 |
| Air Velocity | . 59 | Nitrogen Oxides | 16 |
| Arsenic | . 1 | Non-Combustible | 4 |
| Arsine | . 39 | Oxygen | . 13 |
| Benzol | . 5 | Ozone | 2 |
| Cadmium | 40 | Phosgene | 4 |
| Carbon Dioxide | . 11 | Phosphorus | 13 |
| Carbon Monoxide | . 15 | Phosphorus Pentoxide | 7 |
| Dust | . 11 | Radon & Daughter | |
| Free Silica | . 13 | Products | 7 |
| Fluoride | . 10 | Sulfur | 1 |
| Gasoline Vapor | . 4 | Sulfur Dioxide | 32 |
| Hydrogen | | Specific Gravity | 48 |
| Hydrogene Sulfide | | Wind Direction | 6 |
| Illumination | . 13 | Zinc | 55 |
| Iron Oxide | . 3 | Zinc Oxide | 2 |
| Lead | . 96 | X-ray | 56 |
| Manganese | . 5 | Total Determinations | 621 |



modern sanitary milk-handling techniques. Where there are sanitarians in local health departments, they systematically check local milk handling and bottling methods in order to protect the health of every one; from baby to grandfather.

ENVIRONMENTAL SANITATION

C. W. Brinck director*

Summary The Division of Environmental Sanitation is concerned with all phases of sanitation within the state. In order to bring this about, the division was created by combining the former Sanitary Engineering Division and the former Food & Drug Division into a single body.

Principal highlights of the biennium included emergencies created by floods, stream pollution abatement studies, the development of the first major mosquito survey in Montana, together with the routine work which covered inspections of water, sewage, food-handling establishments and the training of personnel in the water and sewage fields and sanitarians to do the work in the local areas.

In this biennium there was a sharp increase in the volume of work required to meet this division's responsibility in approving the building plans for new schools and plans for remodeling existing school buildings.

The citizens of Montana lost a valuable public servant in the death of Dean W. M. Cobleigh January 15, 1952. His assistance to the State Board *Appointed May 1, 1951.



NEW WATER LINE—All water and sewage line plans are subject to approval by the State Board of Health. Pictured above is one of the water line additions studied and approved by the board's sanitary engineers; workmen are laying part of two miles of new pipe from Miles City's new reservoir southwest of the city to the city pumping plant west of town.

of Health has been invaluable; his work in the interest of public health in Montana has been of great benefit to every citizen of this state. From 1910 until his death—for 42 years—he worked tirelessly in the Board's programs to improve sewage disposal and public water supplies in Montana. He was the first director of the Sewage & Water division and was responsible for the passage of Montana's first food & drug law in 1911.

New Program Plans As new laws are passed relative to sanitation in its various aspects, the administration of these laws is placed in this division. The multiplicity of duties makes it very difficult to properly handle the responsibilities which have already been placed in this office. Therefore, if any plans are made to create additional programs, it will be necessary to provide sufficient personnel to carry out the added work load. It is hoped that it will be possible to improve the inspection of restaurants, hotels, motels and small water supplies.

It is proposed to house all of this division together in one building at some future date, leaving the laboratory services for Food & Drug in the chemical laboratory in the annex building on the capitol grounds. This arrangement will place the administrative work of the division in one building, making it possible to better coordinate the various duties of the staff, and make for more efficient operation. While the laboratories will remain in the present building, this facilitates the chemical laboratory work, because all State Board of Health chemical laboratories are combined.

In order to control rats in Montana, it is recommended that a person be employed by the State Board of Health to bring information concerning the extent of the rat infestation in Montana up to date, and inform Montana

citizens how to control rat infestations. At the present time Montana and Wyoming are the only two states in the nation that are relatively free of rat infestation. If Montana should become infested with rats, it would create a very serious health hazard, besides a great economic loss to the people of Montana. Legislation should be enacted to permit the establishment of districts in Montana for the control of both mosquitoes and rats.

Program Developments The Division of Environmental Sanitation was formed during this biennium, combining the activities of the Division of Sanitary Engineering and the Food and Drug Division. With this combination, all sanitation problems of the State Board of Health are handled in a single division. This has made possible a better use of all personnel. To administer this division, the division has been divided into three sections: water, sewage and general sanitation. The organizational chart (Fig. 1) indicates the activities and methods of operation of this division.

Due to the increased interest in sanitation by the public, the demands made on the division have been great.

Inspections in this division cover public water and sewage plants, schools, railroad water supplies, tourist camps, swimming pools, eating establishments, food manufacturing establishments, locker plants, and the study of such other problems as may develop where sanitation is involved.



The water and sewage sections of this division have been housed on the first floor of the Board of Health building since November 1950 and the former Food and Drug division was moved



SEWAGE OUTFALL—The State Board of Health, as the state pollution authority, is responsible for the prevention and control of stream pollution. Present legislation permits abatement action to be taken by the board only when the pollution effects the health of the people. The raw sewage from an Eastern Montana community with a population of approximately 2,000 is discharged (arrow), without any treatment, into this small creek at the point pictured. The community has voted a special bond issue to eliminate this threat to human health by building a sewage treatment plant.

into the annex building in the spring of 1951. These moves have alleviated a crowded situation.

Water Testing

The bacteriological water laboratory was placed under the direction of the Hygienic Laboratory in an effort to bring all of the bacteriological work under a single head. This was done in July of 1950. The bacteriological water sample containers are sent out as directed by Environmental Sanitation division and the laboratory results are interpreted by engineers of the Environmental Sanitation division. The number of bacteriological examinations made during the biennium increased from about 11,900 to 14,700. These samples served as a check on the condition and operation of public water supplies, and supply information to individuals requesting that their water be tested.



Municipal water supplies are tested at regular intervals. A calendar is used which lists for each week the cities to which sampling equipment is to be sent. By this calendar, plants giving relatively complete water treatment, such as filtration and softening, are sampled twice a month. Samples are taken once a month in community water plants where chlorination is the only treatment or where the water is taken from a surface supply.

Municipal supplies using ground water are sampled a minimum of 4 to 6 times per year.

Water samples from public supplies are submitted to the laboratory in insulated metal shipping cases designed so that ice may be packed around the samples to prevent deterioration in shipping. The sample cases are sealed with a box car type seal.

Water samples from private supplies are transmitted in mailing tubes by the mail; city water samples are sent by express. The express containers are sent from the State Board of Health office by prepaid express and returned express collect. Cooperation from cities returning their sample bottles is a serious problem in some states where such an arrangement is not in use.

In the past five years, the number of water samples processed by this division each year has increased from 5,250 to over 8,000. (See Fig. 2)

Water Disinfection

In the past, several Montana water supplies received no treatment. These supplies have shown considerable contamination, as evidenced by the positive results obtained when testing the water for coliform organisms. These organisms are the organisms found in the intestines of warm-blooded animals, including man. When positive results are obtained, it is indicated

that either human or animal excreta has found its way into the water supply. If it is human excreta, it may contain such organisms as typhoid, dysentary, cholera and others which are not prevalent in this part of the world. From animal excreta, recent investigations indicate that tularemia may be transmitted to persons drinking the water. Tularemia is found principally in the rodents, such as field mice, porcupine, beaver, muskrats and rabbits which have been infected by the disease. Research work indicates that proper chlorination will destroy these disease organisms when they are in the water. Therefore, the owners of public water supplies having systems affected by surface conditions have been asked to disinfect these supplies. Until disinfection could be installed, such towns have been notified to boil their water used for human consumption.

The following towns were asked to disinfect their water during this past biennium, but as of July 1, 1952, had not completed installations:

Bearcreek Nashua
Browning Rexford
Kevin Ronan
Hot Springs St. Ignatius
Philipsburg

These towns started disinfecting their public water supplies this biennium.

Red Lodge Thompson Falls
White Sulphur Springs Columbia Falls

Troy

Previous to this biennium, 54 Montana cities and towns were disinfecting their public drinking water supplies. Two towns, Bridger and Fromberg, provided, in this biennium, covered reservoirs for the storage of the finished public water. Water-users in Helena's Ten-Mile Water System were advised to boil their water during the summer of 1951, due to the fact that the water was recontaminated as it flowed through the system. This contamination apparently had its source at the open reservoirs on the Ten-Mile System.

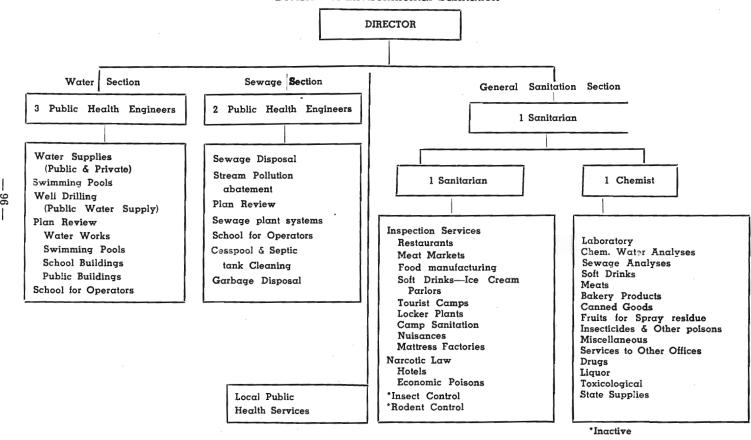
There are now in Montana 118 communities, and eight state-owned institutions with public water systems. Of the 152 water supplies furnishing water to these systems, 94 are from ground sources and 58 from surface sources. The population served in these communities and state institutions is approximately 323,000 or 55% of Montana's total population of 591,024 (as reported in the 1950 census).

Water Inspection & Analysis Fees

This division collects fees levied against public water supplies. For the fiscal year ending July 1, 1951, \$3,810 was collected; for the fiscal year ending July 1, 1952, \$3,822.50 was collected. To comply with the state law requiring that sufficient money should be collected to pay for the cost of this analysis and inspection work, and because costs are running about \$12,000 per year, it was necessary for the Board to triple the fees charged the public water systems for analysis and inspections. This was the first

FIGURE No. 1 MONTANA STATE BOARD OF HEALTH

Division of Environmental Sanitation

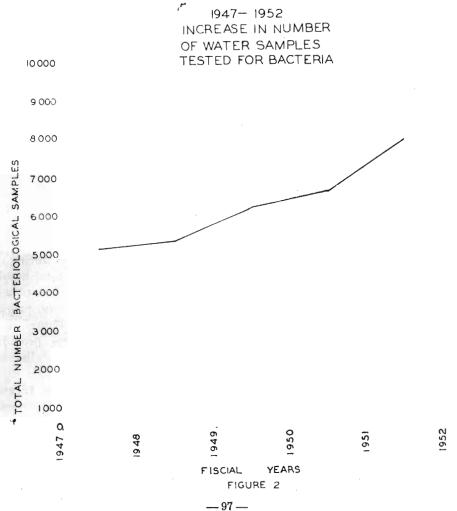


fee change since the law was passed in 1918. These fees are assessed on the basis of population and type of water system, and the increase will be indicated in the next biennial report.

-

Fluoridation of Drinking Water

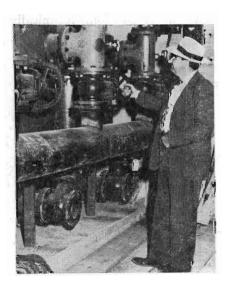
Within the past few years a great deal of interest has developed in the use of fluorine compounds in drinking water to assist in the control of dental caries (tooth decay). Two Montana towns have installed fluoridation equipment to add fluorine compounds to the public drinking water to assist in the control of dental caries: Roundup on Febrauary 15, 1952, and Chinook on March 3, 1952. Plans have been approved for the installation of fluoridation equipment for public water supplies of Bozeman, Dillon and Fort Belknap. To insure proper dosage of the fluorine compounds, regulations for the application of this material were adopted January 20, 1951 by the State Board of Health. These regulations are administered jointly with the Dental Division. This division, through its water section, technically



supervises and approves the installation and checks on operation after the water fluoridation equipment is installed. Close coordination exists with the Dental Division which is responsible for the general direction of the water fluoridation program.

Sewage Disposal Policy

To eliminate public health hazards by better protecting Montana streams, the State Board of Health, on May 18, 1952, adopted a policy which will require treatment of all municipal sewage before discharge into streams. This policy requires that all towns have plans submitted to this division by July 1, 1957, and indicate a date for the completion of the sewage treatment projects. It is expected that all towns should have adequate sewage treatment by July 1, 1959.



POOL EQUIPMENT — A State Board of Health public health engineer is pictured inspecting the filtration units at one of Montana's 57 public swimming pools. Public health engineers work to guard the swimmer's health by inspecting pool construction, operation and maintenance.

Stream Pollution Studies

Pollution studies have been made on the Big Muddy Creek from Plentywood to Medicine Lake, and on the Whitefish Creek between Whitefish Lake and the confluence of the creek with the Stillwater River. The studies have not been completed, since it is necessary that these studies be carried out during various times of the year in order to study the affects of the pollution upon the stream during various stream flows and under various weather conditions. Preliminary results indicate considerable pollution on the Big Muddy Creek and lighter pollution in Whitefish Creek.

Sewage Treatment Plants

Several new sewage treatment plants have been placed in operation during this biennium to bring to 31 the total number of adequate sewage treatment plants in the state. The new plants include primary plants at Billings, Havre, Laurel, Rudyard and Bainville. Plants providing secondary treatment were installed and

placed in operation at Hot Springs and Galen.

Sanitary Licenses

Montana's 1951 legislature passed a law that requires the licensing, by the State Board of Health, of all septic tank cleaners operating in the state. The legislation requires that sanitary licensees obtain a permit from the local health officer for each septic tank, cesspool, or privy they clean. During the first year of operation, 17 licenses were issued; during the second year, 20 licenses were issued. A total of \$185 was collected as fees

for these licenses. This law has had a beneficial affect where there is a local health department sufficiently active to enforce the law. Difficulties are encountered in enforcing the law because of the many counties that do not have an adequate local health department. It is recommended that a legislative committee review the present law with local and State health personnel in order to determine the modifications which would improve the effectiveness of this legislation.



BOTTLING SAMPLES—Dr. Joe K. Neel, U.S. Public Health Service biologist, is bottling a water sample taken from the Yellowstone river near Miles City. Dr. Neel was part of a U.S. Public Health Service pollution-study team that worked with sanitary engineers from the State Board of Health on a study of pollution in Montana in this biennium.

Pulp Mill Location Studies

The U. S. Forest Service and the State Chamber of Commerce in this biennium have shown an interest in developing the paper pulp industry in Montana. If not properly operated, paper pulp mills could seriously pollute the water in Montana's streams.

At the request of this division, L. F. Warrick, chief of the Technical Section of Water Pollution Control of the U. S. Public Health Service, reviewed various locations in Montana and recommended locations for pulp mills. Warrick con-

ducted a study in eastern Montana in August of 1951 with the assistance of the U. S. Forest Service, Montana Chamber of Commerce and the State Board of Health. He has been invited to make a similar study in western Montana. These studies indicate the necessity for adequate stream pollution legislation in Montana to prevent contamination of streams by industry. Legislation of the type endorsed by the Council of State Governments and similar to the uniform legislation sponsored by the U. S. Public Health Service would do much to protect Montana streams from pollution.

Mosquito Survey

Certain sections of Montana have been plagued with mosquitoes. In an effort to control these mosquitoes, a demonstration project has been established at Chinook. The Project is co-sponsored by the Montana Agricultural Experiment Station, the State Board of Health and the Water Projects Section, Communicable Disease Center Activities, U. S. Public Health Service.

The U. S. Public Health Service is supplying the personnel for the project (a sanitary engineer and an entomologist); the Experiment Station is supplying technical direction and is directing the work of one person employed by the Blaine County Mosquito Abatement District to obtain samples of mosquitoes; the State Board of Health is responsible for the administration of this study.

It is believed this project will give valuable information on mosquito control in irrigated areas of the state. This is particularly important at this time, since equine encephalitis has been identified with the culex tarsalis type of mosquito. This variety of mosquito is abundant in Montana.

Rat Infestation



fected with plague.

Studies indicate that the large gray rat, known as rattus norvegicus, is spreading in Montana. These rats have been found along the entire eastern border of Montana and in the vicinity of Lewiston, Havre, Great Falls and Hot Springs. This rat has carried plague from the California ground squirrel to humans and the California ground squirrels in southwestern Montana have been found to be in-

Field Work

The field work for the Division of Environmental Sanitation varies in the different sections. The General Sanitation Section attempts to inspect annually each restaurant, food manufacturing plant, bottling plant, tourist court, meat market and refrigerated locker plant in the state. But with only one man for all of this work, it has not been possible to cover the entire state each year, despite the aid given by the counties. Field work is tabulated below:

| | Public Eating Places (A) | Meat Markets (B) | Food Processing Plants (C) | Soft Drink and/or Ice Cream (D) | Tourist Courts (T) | Frozen Food Lockers | Total |
|--|--------------------------------|---|-------------------------------|---------------------------------------|--|--|--------------------------------------|
| LICENSES ISSUED-1950 | 1696 | 1065 | 227 | 3360 | 766 | 227 | 7341 |
| INSPECTIONS | | | | | | | |
| July 1, 1950-June 30, 1951 State Level Local Health Officers Local Sanitarians Totals LICENSES ISSUED-1951 | 359 1537 2108 | $ \begin{array}{r} 98 \\ 400 \\ \hline 603 \\ \hline 1101 \\ 1045 \end{array} $ | 16 44 138 198 208 | 454 677 1804 2935 3143 | 213 53 136 402 774 | $ \begin{array}{r} 32 \\ 0 \\ 118 \\ \hline 150 \\ 229 \end{array} $ | 1025 1533 4336 6894 6961 |
| INSPECTIONS | | | | | | | |
| July 1, 1951-June 30, 1952 State Level Local Health Officers Local Sanitarians Totals Total Inspections Made | 1398 | 123 445 546 1114 | 14 51 122 187 | 356 809 1494 2659 | $ \begin{array}{r} 31 \\ 12 \\ 176 \\ \hline 219 \end{array} $ | $ \begin{array}{r} 34 \\ 11 \\ 117 \\ \hline 162 \end{array} $ | 707 1744 3853 6304 |
| During Biennium | . 4071 | 2215 | 385 | 5594 | 621 | 312 | 13,198 |
| | | 100 · | _ | | | | |

The Water Section attempts to have each public water supply in the state inspected once each fiscal year. This has been accomplished for the last few years. These inspections are made by a qualified sanitary engineer who also inspects the sewage disposal plant if there is one in the community. Sanitary engineers in the Sewage Section often inspect water plants when in a community working on a sewage problem. The Sewage Section also conducts surveys to determine the extent of stream pollution in the state.

Field work conducted in this biennium by the Water and Sewage sections is tabulated below.

| | Number | Percent of Total |
|---------------------------------------|--------|------------------|
| Inspection of Public Water Supplies | . 298 | 44 |
| Inspection of Private Water Supplies | 20 | 3 |
| Inspection of Sewage Disposal Systems | 197 | 29 |
| Inspection of Swimming Pools | 20 | 3 |
| Miscellaneous Inspections | 143 | 21 |
| | | |
| Totals | . 678 | 100 |

Garbage Disposal

The Division of Environmental Sanitation, advises communities regaring garbage disposal. In this biennium assistance was extended to Drummond and Missoula on this particular sanitation problem.

| | Laborato | ry Work |
|--|----------|---------|
| Bacteri- | | % of |
| ological Laboratory work from July 1950 through June 1952: | Chemical | Total |
| Samples from Public Water Supplies 10,006 | 311 | 66.3% |
| Samples from Private Water Supplies | 442 | 22.4 |
| Samples from Tourist Camp Water Supplies 222 | 3 | 1.4 |
| Samples from School Water Supplies | 9 | 4.0 |
| Samples from United States Government | 17 | 4.1 |
| Samples from Miscellaneous Sources (including those from stream pollution studies) | 46 | 1.8 |
| Totals 14, 7 44 | 828 | 100.0 |

Grand Total of Bacteriological and chemical samples 15,572.

Staff Committees

A representative of this division served, in this biennium, on the Joint Staff Committee of the State Department of Public Instruction and State Board of Health. Other members of this division have, and will, participate in sub-committee activities of this Joint Staff Committee.

This division is also represented on The State Board of Health staff committee for the Narcotic and Alcoholism program.



TAKING SAMPLES—This sanitary engineer from the State Board division of Environmental Sanitation is taking a sample of water from an eastern Montana stream for laboratory study in one of several stream pollution studies conducted in the biennium.

Plan Review

There was a sharp increase, in this report period, of the number of plans for schools, swimming pools and water and sewage systems studied by this division. It is the responsibility of the division to approve such planning as it relates to the health of the people using the facilities.

During this biennium 194 sets of plans were reviewed of which 122 were plans for schools.

Significant Problems

Several emergency situations developed during the biennial period.

Culbertson

Of great concern was the spilling of 50 tons of crude arsenic from a railroad gondola in a train accident near Culbertson, at a point where the surface water run-off was carried into the Missouri river above the Culbertson city water intake. This occurred during the winter

of 1951-52 when there was no run-off; railroad workers removed a large portion of the arsenic. In the spring, during the period of heavy run-off, it was found that some crude arsenic was still present. To protect the Culbertson water supply, the Culbertson city officials requested State Board of Health assistanace. An engineer and a chemist with laboratory equipment checked the arsenic flow carried into the river by the melting snows for a period of three days. At no time was the arsenic found in sufficient concentrations at the city water intake to exceed limits established by the U. S. Public Health Service for acceptable drinking water.

Sidney

At Sidney, in April of 1951, a dam above town broke and flooded the vicinity of the city wells. Emergency disinfection equipment was installed on the water system to eliminate the contamination introduced into the city wells by the flood waters.

Milk River Flood

The staff of this division took an active part in the work at Havre, Chinook, Harlem, Malta, Saco, Dodson, Glasgow and Nashua in an effort to control the outbreak of any disease in this area following the Milk River Flood in April of 1952. The sewage plant at Havre was flooded and out of service for over a month because of the flood. The public water supply at Havre was not



MOSQUITO BREEDING GROUNDS—A cooperative mosquito study in the Milk river valley started in 1952 shows that the major causes of the vicious and persistently high mosquito population in the valley are "prolonged accumulations of water on irrigated fields and inadequate disposal of waste water" as pictured above. The study was a cooperative effort by the State Board of Health, the Montana Agricultural Experiment Station, the Blaine County Mosquito Control Committee and the Water Projects Section, Communicable Disease Center, U.S. Public Health Service.

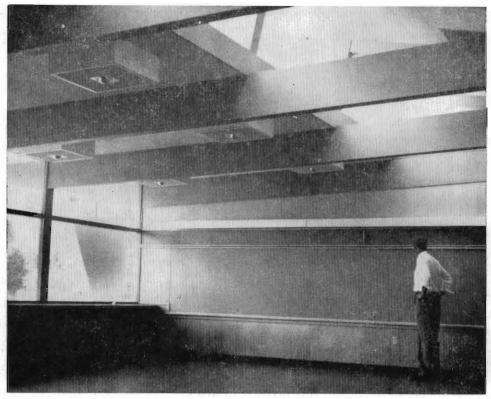
affected; however, many private wells in North Havre were flooded and required the assistance of this division in disinfecting and testing.

At Chinook the water and sewage systems were not affected, although the flood waters completely surrounded the water plant and the only approach to the plant was by boat. The sewage plant at Chinook, by its continuous operation, prevented flooding of the basements throughout town. Chinook city officials estimate that the entire cost of the sewage plant could be justified on the basis of the basements saved from flooding in this one situation.

The sewage plant at Harlem was not affected by the flood, but the basement of the water plant was flooded. However, safe water was delivered to the community throughout the emergency.

At Nashua, flood waters completely surrounded the well and entered the pump house. By sand-bagging around the well, it was possible to save the motors and pumps. Using chlorinating equipment supplied and installed by the State Board of Health, a safe supply of water was distributed to the people of Nashua. Other communities in this area managed to protect their public water supplies and sewage disposal systems.

The clean-up after the flood was very difficult. Since much of the flood water in the Milk river carried human sewage, the problem was multiplied and required disinfection, sterilization and other means of preventing disease due to poor sanitary conditions. No disease was traced to insanitary conditions created by this flood.



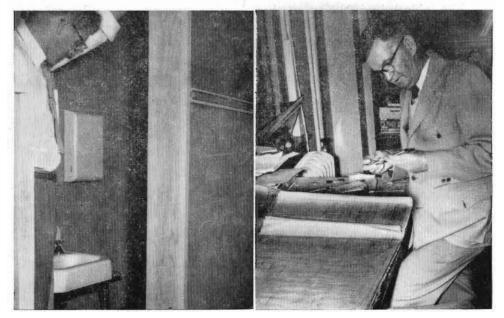
GUARDING SCHOOL CHILD'S HEALTH—As part of a continuing program to protect the health of Montana's school children, engineers in the State Board of Health Division of Environmental Sanitation review the sanitation features of all new and remodeling school building plans to see that Montana school buildings provide the best possible sanitary conditions for the school child. The above picture of a room in the new Whittier grade school in Bozeman shows the improved natural lighting to be found in many of the new schools now being built in Montana.

Emergency Installations

The State Board of Health maintains several pieces of equipment designed to feed liquid chlorine and calcium hypochlorite for the disinfection of water. This equipment is available to Montana communities in emergencies. This division will, in emergencies, take the equipment to the community and supervise its installation.

There is also maintained in the State Board of Health a supply of chlorine, both in gaseous form and in the powder form as calcium hypochlorite. This supply is kept for use in public water systems in emergencies.

Also, this division has available for loan in emergencies, two chlorinators for feeding gaseous chlorine; three hypochlorinators for feeding calcium hypochlorite into water.



GUARDING SCHOOL CHILD'S HEALTH—All new and remodeling school build plans are reviewed by public health engineers in the State Board of Health's division of Environmental Sanitation.

In this biennium, this division installed emergency equipment in seven communities in the state.

General Sanitation

The inspection of tourist camps, restaurants, locker plants and food manufacturing plants represents the greatest weakness in this division, because only one person is available in this division for the work. While this is, by law the responsibility of local health officers and local health departments, the local health officers are usually part-time men and are unable or unwilling to spend their time making sanitary inspections. There are 15 full-time sanitarians in local health departments, serving a population of about 319,000, approximately one-half the state population. Two additional counties have budgeted for sanitarians; if and when these two sanitarians are employed, it will increase the total number of persons served by sanitarians and local health departments another 20,000—then approximately 339,000 people will be served by sanitarians in Montana. The local sanitarians are doing an excellent job in their areas. This division's single sanitarian attempts to cover the balance of the state once each year. It is, however, not possible to cover all of the state, and the single inspection is not adequate to bring enforcement of the sanitary regulations in Montana communities and to carry on the necessary education program. It will be necessary that greater numbers of men be employed for this purpose.

The table below shows that there has been a decrease in fees collected for food handling and processing establishments, tourist courts and lockers. This slight decrease is due, possibly, to a decrease in the number of food handling establishments in the state and poor sanitarian inspection coverage. In the first year of this biennium, no sanitarian was employed since none were available for the position.

| Year | Food | Camp | Locker Plant | Fees |
|-------|----------|----------|--------------|-------------|
| | Licenses | Licenses | Licenses | Collected |
| 1950 | 6,348 | 766 | 226 | \$16,483.00 |
| 1951 | 5,958 | 774 | 226 | 15,699.00 |
| 1952* | 5,451 | 740 | 215 | 14,527.00 |

*1952 license data as of July 29, 1952. Because these fees are collected on a calendar year basis they will not be shown entirely until the next biennial report.

A total of 16,789 establishments were inspected by sanitarians during this biennium. Of this number, 13,079 were inspected by local health department representatives and 3,719 by the State Board of Health sanitarian.

One means of improving conditions at Montana tourist camps and courts has been to grade tourist courts and to release this information to the State Chamber of Commerce and to the State Highway Department for use at port of entry stations. These lists are not distributed to the general public, but are used for informational purposes only. In past years these lists have been mimeographed. State law now requires that these lists be printed. Because of the high cost of printing this information is not being released at this time. Some method should be worked out so that this information can, at a reasonable cost, be placed in the hands of persons who need it.

The oustanding needs in Montana, as they pertain to sanitation, are:

- 1. Adequate inspection of restaurants and tourist courts.
- 2. Better program for small water supplies.
- 3. Development of a minimum insect and rodent control program in the State.
- 4. Legislation is needed to improve our stream pollution control.
- 5. An adequate staff is needed to carry out the existing program in this division.

Related Activities The Montana legislature in 1949 enacted Chapter 203 establishing a system of state examination for master and journeyman plumbers. The law states that "one of the members of the (plumbing) board shall be the director of the Division of Sanitary Engineering of the Montana State Board of Health or his duly designated representative, who shall be an ex-officio member and secretary of the State Board of Plumbing Examiners. The office of the director of the Division of Sanitary Engineering of the State Board of Health shall act as the office through which all business of the board shall be transacted."

8

T

ä



RAT INFESTATION SPREADING—The shaded areas of this map indicate the parts of the state in which rat infestations were found in 1950-51 studies conducted by the Montana State Board of Health with assistance from the U.S. Public Health Service.

In conformity with this law, the director of the division of Sanitary Engineering acted as secretary of the Board of Plumbing Examiners until the Sanitary Engineering Division of the State Board of Health was combined with the Food and Drug Division to form the present Division of Environmental Sanitation. During the biennium, H. B. Foote, acting chief of the water division, has represented the State Board of Health on the State Board of Plumbing Examiners. The correspondence, meetings and examinations connected with this responsibility have increased the work-load of this division's staff. This added work has required the employment by the Board of Plumbing Examiners of a bonded assistant secretary to care for the license fees and the office detail.

State law also requires that a chemist of the State Board of Health do the analytical work for the Dairy Division of the State Department of Agriculture:

This places a considerable work-load on this division. However, the bacterial work will now be done by the State Board of Health Bacteriological Laboratory and will relieve this division's chemist of much of this work. The following list shows the amount and types of analysis made on dairy products.

| Ice Cream 19 | 948-50 | 1950-52 |
|---|-------------------|-------------------|
| Bacteria Butter Fat Total Solids | 1,419 48 33 | 1,664 23 50 |
| Butter Butter Fat Bacteria, yeast, mold | 7 | 2 375 |
| Adulteration with oleo | 33 53 | 73 |
| Butter FatMoistureSediment | 16 26 | 46 |
| Eggs Total Solids | | 3 |



The chemical laboratory has assisted Montana's doctors and law enforcement officers in testing samples where there are not other laboratories available for this service. These miscellaneous samples included 12 for poisons at the request of coroners and law enforcement officials; 16 tests for blood alcohol for law enforcement officers and doctors; 2 miscellaneous poison analysis; and 10 liquor analysis for other state agencies. The laboratory has also tested 109

meat samples for moisture and fat, nineteen of these meat samples were also examined for their sulfite content.

Schools were conducted, in this biennium, for water and sewage plant operators and managers at Montana State College in November of 1950 and 1951. These schools were planned and conducted in cooperation with Montana State College.

With the death of Dean W. M. Cobleigh, Dr. E. R. Dodge, head of the State College of Civil Engineering department, has been responsible for the organization of the schools.

The first School for Sanitarians was held at Montana State College in November of 1951. Members of the staff of this division appeared on the program with faculty members from the State College.

In April of 1951 the Montana Section of the American Water Works Association held its twenty-sixth annual meeting in Helena; the twenty-seventh meeting was in Billings in April of 1952. A. W. Clarkson, public health engineer in this division, is secretary-treasurer of the Montana Section of the association.

The Montana Sewage and Industrial Wastes Association, which is a member of the nation-wide Federation of Sewage and Industrial Wastes Associations, held its Seventh annual meeting in Helena in the spring of 1951, and the Eighth annual meeting in Billings in the spring of 1952. H. B. Foote, public health engineer in this division, served as secretary-treasurer of this organization until 1952; the position is now held by H. W. Taylor, Public Health Engineer in this division of the State Board of Health.

The National Association of Sanitarians organized in Montana in November of 1951 and elected E. M. Andrew, sanitarian in the General Sanitation section of this division, secretary of the Montana organization.

there of the nor unitary been of the nor unitary black in the plant of the second of t



HEALTH EDUCATION

K. Elizabeth Anderson, director



Summary Progress in the fields of health, science and public health, particularly as it relates to the cause and prevention of disease or of death, is of little value unless this knowledge is made known to the people. Gathering "such information . . . for diffusion among the people" is an important responsibility of the State Board of Health as set forth in the law of 1901.

This responsibility has been delegated by the Board to the Division of Health Education.

In carrying out this responsibility the division serves and assists all the other divisions of the State Board of Health. All staff vacancies in this division were filled in the biennium; this will allow a more comprehensive program, designed to close the gap between scientific knowledge and health practices of the public in Montana.

Public health education under this division takes many forms and employs a great variety of vehicles in informing special segments of the state's population and the public in general. This is clearly indicated by a quick look at some of the many activities of this division in the biennium: maintaining a central library for the entire staff of the board; narcotic and alcoholism consultant service in carrying on educational studies, and developing a pilot program; aiding other divisions of the Board in developing workshops and training institutes; developing and distributing public health publications on health problems in the state; assisting in developing and improving health education programs in the units of the University of Montana; working cooperatively with the Montana Department of Public Instruction on public health education and public health problems in Montana's public schools; giving consultant and guidance service to community groups working on local public health problems; and many other activities that are detailed in other sections of this report.

The publishing of a monthly bulletin, "Treasure State Health" was initiated in July of 1951.

New Programs The greatest need today in Montana's health education is for health educators in local health departments. It is hoped that in the next biennium some of the local health departments will add health educators to their staffs.

Plans are to be formulated for regular distribution of articles on health conditions and problems in Montana to the weekly newspapers in the state. In resuming this health education activity, the material will be developed with a sensitive feeling for the publishers and editors needs and desires.

It is expected the community organizations developed in the counties of the state for the intensified Chest X-ray Survey program will provide, in the future, a means to assist communities to study other health problems.

Vacancies on the staff of this division, in this and previous bienniums, have been a major handicap to the health education activities of the State Board of Health. Now, with all of these vacancies filled by qualified personnel, it can be expected, in the future, that health education activities in Montana can be expanded and intensified.

Program Developments

New office space in the Mitchell building on the capitol grounds has greatly facilitated the health education activities. Also, revision of the functions of the division and the filling of all staff vacancies by the close of the biennium will allow the utilization of the services of the division in a more productive and satisfactory manner.

The initiation of all-staff and professional staff meetings by the Executive Officer has provided the health education staff an opportunity to assist in on-the-job training for other members of the board staff. Frequent meetings have been developed within the division and on-the-job training meetings with the Division of Public Health Nursing have been conducted in an effort to increase proficiencies and plan the work of the division.

Through conferences, joint committees, assistance to local public health workers, meetings with administrators and teachers and in other ways this division continued in this biennium to give assistance in the school health program. A representative of this division serves on the Joint Staff Committee developed between the State Department of Public Instruction and the State Board of Health.

Continuing the division's participation in health education in the teacher-training units of the University of Montana, summer workshops were conducted at Eastern and Western Colleges of Education. In developing these programs, materials on health education, lecturers and other instructional aids were provided the colleges.

Consultation was given to health education instructors at the University units in this biennium by:

Information on health topics such as disease control including narcotics and alcoholism, tuberculosis control, heart disease and cancer, sanitation, nutrition, public health department responsibilities and activities.

Assistance in developing instruction, techniques and materials.

Aid in planning health education in the elementary and secondary school health programs.

Staff members from this division participated in two Physicians and Schools Conferences sponsored by the Montana Medical Association, the State Department of Public Instruction and the State Board of Health by: Assisting in planning the meetings and making general arrangements; active participation on several parts of the program (panel, speeches, and discussions). Developing follow-up meetings and conferences with local educators and public health workers to promote activities endorsed by the conferences.

One of the health education consultants served as coordinator of the planning committee and as workshop director for the workshop on "Nursing Care of the Tuberculous" held in Butte in March 1950. Consultation in health education was made available through the planning and during the workshop. This workshop offered one of the better opportunities for the utilization of health education services.

By helping to plan programs, develop the mechanics of instruction and securing the instructional material, the division assisted in the institutes conducted by the Division of Public Health Nursing for in-service training of nurses on cerebral palsy and rehabilitation nursing.

For the first time, plans were developed for the Division of Health Education to assist in the Chest X-ray Survey program. A health educator was employed primarily to strengthen the effectiveness of the follow-up aspects of the program. His services are being integrated with those of two health educators from the Montana Tuberculosis Association through their assignment to the Chest X-ray staff.

Health educators continued to give educational guidance to health councils and other citizen groups working to improve local health conditions and services. In the winter of 1950, health education staff members participated with other state staff in a series of meetings sponsored by the Montana Health Planning Council in informing the citizens in nine centers of the advantages and services to be expected of full-time local health departments.

In striving to give well-balanced direction and facilitate the work of the narcotic and alcoholism health education, the executive officer named a staff committee to direct the consultant's program. The committee consists of the Disease Control and Health Education directors and the acting director of the General Sanitation section of the Division of Environmental Sanitation. The executive officer of the Board secured an advisory citizens' committee to the narcotics education and alcoholism program. This committee consists of some 26 persons designated by 19 organizations interested in the problem.

Criteria for Pilot Program in narcotic education and alcoholism was established. The pilot studies consist of coordinated programs of activities designed to provide scientific information concerning narcotics, alcohol and habit-forming drugs in the area covered. Consultation service in the direction of the programs is provided by the narcotic education consultant in this division. Ravalli county was accepted as the first pilot area and work was initiated.

The division continued its consultation in narcotic education and alcholism to public and private school educators, university staffs, local health personnel, citizen groups such as P.T.A.'s, civic organizations, health councils, etc.

For the first time Montana's State Board of Health was selected for field training of graduate students in public health. The University of California's School of Public Health at Berkeley sent a health education student in June 1952 for three-months on-the-job training. Graduate students in public health are required to take nine months of academic training and three months of field training.

Three health education staff members have been assigned responsibilities in the Training and Public Information Section for Civil Defense Health Services.

The first issue of "Treasure State Health," official bulletin of the State Board of Health, was published July 1, 1951. Issued monthly, the bulletin is available to interested citizens throughout the state. Official bulletins



PUBLIC HEALTH LIBRARY—In this biennium, for the first time, a library serve the entire State Board of Health was created. All books and marging pamphlets available in the divisions of the board were collected and cool logued for convenient, central reference by all public health workers in the state. The Division of Health Education manages the library, prepares biblicaraphies, locates professional, technical and informational materials for convenient public health personnel in Montana.

were issued by the State Board of Health monthly from August 1904 through October 1920; but from then until June of 1951 no official monthly bulleting was issued.

Current educational articles are prepared for the news services and frequently special articles and pictures of local interest are prepared and distributed to local daily and weekly newspapers in the state.

Articles were prepared twice a month for the weekly papers until December of 1951. At that time the articles were discontinued when a survey revealed that so few were used that they did not justify the time and expense involved.

Two pamphlets, "Prevent Rabies Here" and "Keep Montana Rabies Free" were prepared cooperatively with the Division of Disease Control to assist in the educational campaign planned to prevent an invasion of rabies into eastern Montana from neighboring states.

A pamphlet, "One Out of 6," describing local health services, the cost and advantages of full-time local health departments and the procedure for developing local health services, was prepared cooperatively with the Division of Local Health Services.

Materials explaining new health education methods were prepared and demonstrated:

Kinds of meetings and their merits and limitation.

2

R.

Comparative effectiveness of discussions as compared to lectures.

Socio drama as a means of visualizing a problem or solution—setting the stage for further discussions.

End of meeting evaluation slips, etc.,—check up on meetings to determine what was good or not good.

Discussion leader guides.

The Health Education division assisted in editing the 1949-50 biennial report and other reports, and educational materials developed in this and other divisions.

Pamphlets, bulletins, reports, films, film strips, were distributed to professional and lay citizens in the state seeking improved health materials and techniques.

For the first time a library to serve the entire State Board of Health was created. All books and many pamphlets available in the divisions of the board were collected and catalogued for convenient, central reference by all public health workers in the state. This division manages the library, prepares bibliographies, locates professional, technical and informational materials, collects and routes current health publications and articles for all public health personnel in the state.

Films, books, pamphlets, recordings and all other new health education materials were reviewed by this division before purchase.

The State Board of Health has 69 health films which are loaned on request. These films were reviewed and repaired in the winter of 1951-52. Film leaders were attached to each of the movies to inform the viewers that the education movie is available and distributed through the State Board of Health. There are also 11 film strips and six film strips with recordings.

Slide projectors, movie projectors and other visual education equipment were purchased to facilitate the use of visual aids for educational purposes.

Significant Problems . Local health educators are needed in order to reach more people and in order to carry on a more effective health education program.

A plan needs to be devised in order that articles prepared for the editors of the weekly papers will be acceptable and useful.

Related Activities Assistance in program planning has been given to the Montana Health Planning Council. The division director also serves as the secretary-treasurer of the council.

The division is represented on the Joint Staff Committee of the Department of Public Instruction and the State Board of Health. This representative is serving as secretary. Other health educators as well as the representative are giving assistance in planning the Workshops in School and Community Health and Safety.

Other committees in which health educators of this division were participants are: Montana State Committee for Children and Youth; the National Conference for Children and Youth; the Lewis & Clark Committee on Children and Youth; the Third Community Organization for Health

Workshops sponsored by Montana State College and the Extension Service; Montana Conference of Social Welfare; State Nurses Association; Holy Rosary Hospital In-Service Training Institute; State Society for Mental Hygiene; State Safety Conference; Grange District Leadership Training Conference, State Conference American Association of University Women; Montana State College School of Nursing; Montana Association for Health, Physical Education and Recreation.

Active cooperation with the Montana Public Health Association was continued in the biennium; the division director served as president of the association in 1950-51.

— 118 —



AWARD WINNER—The new 27-bed Carbon County Memorial Hospital at Red Lodge, was named "Modern Hospital of the Month" by the Modern Hospital Publishing Co. for February 1952. The award was made on the basis of "excellence of architectural design, functional planning, economy of construction and operation, and proper provision for hospital needs of the community." The \$324,544 hospital was built with \$106,648 in federal assistance administered through the State Board of Health.

1. Hospital Survey & Construction

Summary Montana was allotted \$1,208,279 in federal funds for hospital construction purposes during the first five years of the federal program. Of this amount, \$407,133 was allotted during this biennium.

Due to the limited federal monies allocated to Montana, it soon became apparent that financial assistance could not be granted to all sponsors of hospital projects. As a result, sponsors of larger hospital projects and some of the hospital projects in the top priority bracket under the state plan embarked on hospital construction based entirely on local finances.

The original state hospital construction program (1948) listed twentysix hospital projects in the top priority group, eligible to receive federal assistance. At present there are only seven projects in this classification.

Federal assistance has been granted through this division to seventeen general hospital projects in Montana. When completed, these hospitals will make 376 more hospital beds available in the state. Twelve of the projects have been completed and occupied; five are under construction.

In this biennium, sponsors of hospital projects without federal aid remodeled and expanded existing facilities to add 199 more hospital beds in the state; new facilities built without federal aid added 487 beds in the biennium. This gives Montana a total of 1,062 new general hospital beds, completed or under construction, over the five year period from 1948 to 1952.

Nine hospital projects—three for full participation and six for partial participation, were developed and placed under construction during this biennium. In addition to this, one project for full participation under the federal assistance program has been developed and will be placed on the market for bids shortly after June 30, 1952.

New Program Plans

The original Montana State Plan for Hospital construction was developed early in 1948. Annually this program has been revised in view of progress in the construction program and in order to keep current the need for additional beds throughout the state in view of changing conditions. The latest revision of the State Plan for Hospital con-

struction was submitted to the Surgeon General, U. S. Public Health Service for approval on June 2, 1952.

This, as well as previous revisions, was developed after discussion with, and the advice of, the Advisory Hospital Council. This group has met annually since the inception of the hospital survey and construction program.

An inventory and survey was made during 1945 of existing hospital and public health facilities in Montana. Because of the construction of new facilities, and the remodeling and expansion of existing facilities, it is planned to conduct a survey of Montana's older hospitals, presently classified as acceptable, to determine those in need of replacement due to age, obselesence or construction.

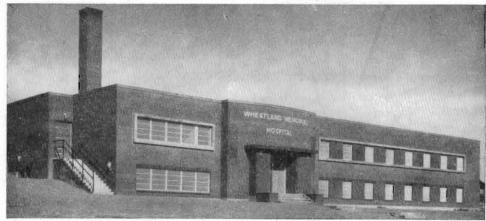


Evaluation surveys have been conducted by this division to determine the utilization of new general hospitals constructed under the hospital program. The purpose of these sur-

veys has been to obtain information from administrators, superintendents of nurses and other hospital personnel of their hospitals, use made of the facility by physicians and patients and to obtain comments relative to the physical plant. The survey is made after the new facility has been in operation for at least one year. The percentage occupancy for the period indicates the use made of the facility by the people in the hospital service area. It also indicates whether the physicians in the area are making use of the facilities at their disposal and whether or not additional physicians have located in the area because of the hospital being available to them.

Studies are made of hospital layout to determine its effect in economy of operations and whether use is being made of the various elements in the hospital. In this way, deficiencies in design, and function are noted and taken into account for future programming and hospital project development. This results in the incorporation of desirable features in new hospital design in order to effect the best possible facility at the lowest possible cost to construct, operate and maintain.

Sponsors of hospital projects and architects engaged in hospital design have given recognition to this division for experience gained through the construction program. This has resulted in requests to the division, from sponsors of projects in which federal assistance is not involved, for consultative services in problems of remodeling, expansion and new hospital construction. Where requested, these services have been given and hospital literature and planning material has been distributed in an effort to effect better hospital planning at the community level.



6

HARLOWTON—The new 31-bed, \$271,503 Wheatland Memorial Hospital at Harlowton was opened May 1, 1951.



CULBERTSON—The 10-bed Roosevelt Memorial Hospital at Culbertson was built at a cost of \$104,002. The hospital was opened to receive patients April 2, 1951.

scheduled and placed under construction in this biennium. These included replacement of exisiting facilities at Scobey, Libby, Plentywood, and Round-up and construction of new facilities at Harlowton, Culbertson, Hot Springs, Baker and Philipsburg.

The Summary of Project Construction Schedule (see page 122) lists all hospitals receiving federal aid to date. Of the eighteen projects listed, six are receiving federal funds on only a portion of the total project, such as assistance in completing a project already under construction and, in two instances, in equipment for the hospital. In the case of the Sanders County Hospital at Hot Springs, and the Sheridan Memorial Hospital at Plentywood, fixed sums of \$60,000 and \$50,000 respectively in federal funds have been granted to supplement local finances available for construction.

The estimated federal share of project costs for all scheduled Montana projects amounts to \$1,609,662.93 while to date Montana has received allotments totaling \$1,208,279. This is because of the scheduling of projects that will be

Montana State Board of Health Summary of Project Construction Schedules

| PROJECT | Location | No. of Beds | Date Approved | Total Estimated Cost | Estimated Federal Share | Federal Payments to Date | Status |
|----------------------------------|-------------|----------------|------------------|----------------------------|-------------------------------|--------------------------------|----------------------|
| Glacier County Memorial Hospital | Cut Bank | 46 | 12/1/48 | \$307,173.47 | \$101,404.72 | \$101,404.72 | Opened 5/21/49 |
| McCone County Hospital | Circle | 10 | 12/9/48 | 170,462.07 | 55,414.02 | 55,414.02 | Opened 4/5/51 |
| Sweet Grass Community Hospital | Big Timber | 13 | 6/3/49 | 162,851.07 | 54,283.69 | 54,283.69 | Opened 9/20/50 |
| Teton Memorial Hospital | Choteau | 24 | 6/27/49 | 208,492.36 | 67,741.28 | 61,786.70 | Opened 6/28/51 |
| Toole County Hospital | Shelby | 30 | 10/3/49 | 339,219.88 | 113,073.29 | 88,518.70 | Opened 4/20/51 |
| Carbon Coun y Memorial Hospita | 1 Red Lodge | 27 | 10/10/49 | 324,544.39 | 106,648.13 | 106,648.13 | Opened 5/9/51 |
| Malta Hospital | Malta | 30 | 3/17/50 | 265,793.22 | 112,722.90 | 103,594.01 | Opened 12/10/51 |
| Garfield County Hospital | Jordan | 22 | 4/17/50 | 249,334.00 | 105,742.55 | 92,755.97 | Opened 8/1/51 |
| Daniels Memorial Hospital | Scobey | 20 | 8/24/50 | 267,412.32 | 112,137.26 | 106,502.91 | Opened 4/8/52 |
| Wheatland Memorial Hospital | Harlowton | 31 | 8/29/50 | 271,503.30 | 49,850.80* | 49,850.80 | Opened 5/1/51 |
| Roosevelt Memorial Hospital | Culbertson | 10 | 6/15/51 | 104,002.23 | 38,221,15* | 19,191.46 | Opened 4/2/51 |
| Sanders County Hospital | Hot Springs | 19 | 6/15/51 | 256,500.00 | 60,000.00* | 55,800.00 | Opened 4/14/52 |
| Fallon County Hospital | Baker | 19 | 10/16/51 | 299,415.64 | 119,646.27 | , | Under Construction |
| Granite County Hospital | Philipsburg | 10 | 10/15/51 | 235,233.04 | 92,093.22 | | Under Construction |
| St. John's Lutheran Hospital | Libby | 26 | 6/5/52 | 303,745.80 | 28,057.20* | | luled to open 7/1/52 |
| Sheridan Memorial Hospital | Plentywod | 21 | Pending | 253,547.52 | 50,000.00* | | Under Construction |
| Roundup Memorial Hospital | Roundup | 18 | Pending | 224,260.17 | 72,994.65* | | Under Construction |
| Livingston Community Hospital | Livingston | 52 | Pending | 675,474.50 | 269,631.80 | | for bids Aug. 1952 |
| TOTAL | | 428 | | \$4,918,964.00 | \$1,609,662.93 | \$895,751.11 | |

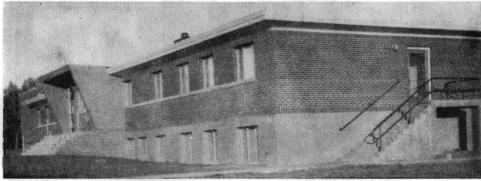
^{*} Participation in portion of project on'y.

completed as future anticipated congressional appropriations, with subsequent allotments to Montana, become available.

This division made twenty-eight project inspections during the report period; this resulted in the payment of \$668,378.69 to the sponsors of hospital projects. The total payments made to sponsors of hospital projects, since the beginning of the program, is now \$895,751.11. To date final payments have been made to five projects and these have been officially closed; final payment is pending on two other projects. The division has been concentrating its efforts to prepare projects for final payment as rapidly as project conditions allow.

The Carbon County Memorial Hospital at Red Lodge was named the February (1952) "Modern Hospital of the Month" by the Award Committee of the Modern Hospital, national publication for physicians and hospital administrators.

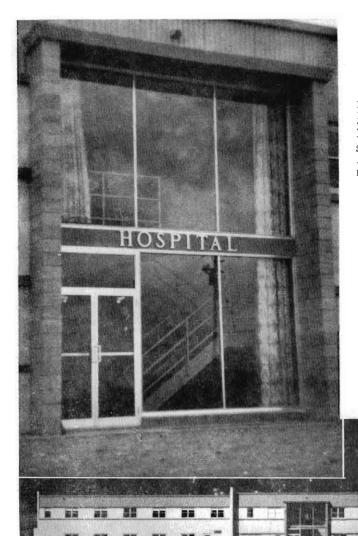
Such an award is made each month by the magazine "on the basis of excellence of architectural design, functional planning, economy of construc-



SCOBEY—The 20-bed Daniels County Memorial Hospital at Scobey, built at a cost of \$267,412 was opened to receive patients April 8, 1952.



CIRCLE—The 10-bed McCone County Hospital at Circle was opened April 4, 1952 to receive patients. The hospital cost \$170,462.



19 MORE BEDS—The new 19-bed Sanders County Hospital at Hot Springs was built at a cost of \$256,500 and was opened April 14, 1952 to receive patients.

tion and operation and proper provision for hospital needs of the community."

Three certificates of award, commemorating the selection of the Carbon County Memorial Hospital for the recognition were presented by the publishers to the architects, the hospital and the Division of Hospital Facilities of the State Board of Health.

Cushing and Terrell, architects and engineers, of Billings, prepared the plans and specifications for the 26-bed hospital constructed by the Memorial Hospital Association of Red Lodge.

Significant Problems I imited Federal monies allocated to Montana for hospital construction purposes continues to be a problem, since

the demand for financial assistance is greater than available funds. In the past biennium, due to insufficient federal monies, it was not possible to give the full amounts of permissive support to all eligible project requests.

This may continue to be a problem since all Federal funds that may be expected through June 30, 1955 are already requested and allocated to hospital projects except for approximately \$170,000. It is anticipated that this amount will be allocated to additional hospital projects early in the next biennium.

The Federal Hospital Survey and Construction Act will terminate June 30, 1955, unless it is extended for another five-year period. The last allotment to Montana under the present program will become available to Montana after July 1, 1954.

The Korean crisis in some instances brought about a delay in the completion of hospital projects. This resulted from material substitutions, delays in delivery of construction materials and failures to obtain furnishings and equipment. This has, also, to some extent caused a delay in closing out projects.

Increased construction costs, in some instances, required additional local financing before construction contracts could be awarded. In two cases, it was necessary to reduce the scope of the proposed project in order that the cost would come within the limits of the finances available to the sponsors.

Related Activities 'The Defense Production Administration designated the Federal Security Agency, Public Health Service as the claimant agency for products and materials under the controlled materials plan for health facilities construction. At the request of the U. S. Public Health Service the Montana State Board of Health is cooperating in the program. All applications requesting authorization to begin construction and allotments for controlled materials for health facilities are channeled through this division for review and recommendations. This applies to all health facility construction regardless of whether or not the sponsors are eligible for federal funds.

All applications channeled through the division have received prompt attention and have resulted in approval for construction and allotment of controlled materials.

2. Licensure of Hospitals & Homes for the Aged

Summary

The State Board of Health is charged with the administration of the licensing laws for hospitals and homes for the aged. The best constructed facility—operated below good, accepted standards—could result in poor care and service for the patient. The purpose of the legislation covering licensure of hospitals and homes for the aged is to promote safe and adequate care of individuals in these institutions in the interest of public health and welfare. In making inspections of hospitals and homes for the aged for licensure, it has been the policy of this division to help the operators improve the physical plant and meet the standards as set forth

in the Rules and Regulations of the State Board of Health. Every effort has been made to do this through service and education rather than by policing.

At the time inspections are made, recommendations are offered for improvements for the facility in order to provide maximum benefits to the patients, or residents. Re-inspections are made periodically to determine that standards are being maintained.

There were 75 licensed hospitals and 71 licensed nursing and/or boarding homes in Montana as of June 30, 1952. Montana has a total of 5,967 hospital beds; divided into three categories they are: 3,792 general hospital beds, 1,950 mental disease beds and 225 tuberculosis beds.

In the general hospital category, the state has 6.4 beds per thousand population; this is somewhat higher than the theoretical overall requirement of 5.5 beds per thousand population. The Montana State Hospital at Warm Springs with 1,950 beds would require an additional 995 beds to give 2,945 beds theoretically required on the basis of 5 mental disease beds per thousand population. The Montana Tuberculosis sanitarium at Galen will have approximately 335 beds available upon completion of the hospital's expansion program; this should adequately meet Montana's tuberculosis bed requirement.

Plans and specifications for all new hospital construction and for remodeling or alterations to existing facilities are reviewed by this division and by members of the medical staff of the department. Consultive services are extended to the sponsors of hospital projects and to architects engaged in hospital design and planning.

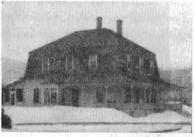
New Program Plans For the past few years, some of the small hospitals and homes for the aged have requested consultive services for meal planning. Unfortunately, this service has not been available.

The Montana Dietetic Association and the Home Economics Research Department of Montana State College, cooperating with the State Board of Health, are presently developing a program to give such assistance. A questionnaire has been prepared and distributed to hospitals and homes for the aged in an effort to determine service desired.

It is anticipated that, as a result of this survey, a booklet on the subject of meal planning and food purchasing will be prepared for distribution. Due to personnel and budget limitations, it will not be possible for representatives of either the Home Economics Research Department or the Montana Dietetic Association to meet all of the requests for their services. However, some visits will be scheduled and as much assistance as possible will be rendered.

Program Developments The present hospital standards were prepared and distributed to hospitals early in 1948. The intent of the standards is to establish basic principles of hospital construction and operation which, in the light of existing knowledge, will insure safe and adequate care for hospital patients.

The licensing program has brought about the construction of better hospitals. As a result of new construction, expansion of existing facilities and improvements to existing hospitals, the present standards are no longer



ď.

NEW & OLD—The old hospital at Libby (left) has been replaced by the new 26-bed St. John's Lutheran hospital. The new hospital was built with \$28,057 in federal assistance administered by the Hospital Facilities division of the State Board of Health under federal Hospital Survey & Construction legislation.



considered as minimal. Plans are underway to revise the standards, making them more suitable in Montana with the aim of providing better hospital care to the patient. The revisions have been requested, in the form of a resolution, by the Montana Hospital Association.

The Advisory Hospital Council on Licensing met in Helena on February 23, 1952. The previous meeting of this Council was held on October 20, 1948. The pending revision of the standards was discussed. Because of the complexity of the revision of the standards by action of the Council, a sub-committee was appointed to work with the division in preparing revised standards for submission to the Council at a future date. The sub-committee of the Council will meet in the first few months of the next biennium and every effort will be made to complete the revision so that copies of the new standards may be distributed to all hospitals before July 1, 1953.

Homes for the aged present a problem quite different from hospitals. For the greater part they are private homes and few, if any, were constructed for the purpose for which they are used. Considerable progress has been made in bringing better facilities and services for the aged but much work is still required in this field. The standards for homes for the aged were prepared and distributed early in 1948; they, too, are to be revised in the near future.

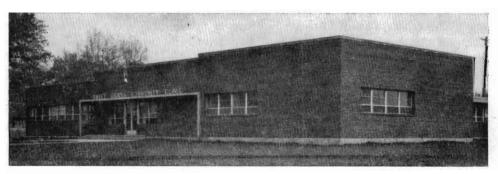
Significant Problems Within the past fiscal year all hospitals and homes for the aged in the state were inspected. These inspections involved 105 visits to hospitals and 76 visits to homes for the aged. The bulk of the inspections were made by the Hospital Nursing Consultant, who, in addition to these duties, carried out an educational program for Maternity and Infancy Nursing in hospitals. Due to the heavy work load it was only possible to make one visit to each hospital and home for the aged during the year.

If more frequent visits could be made to the licensed facilities, a more effective licensing program could be developed. Technical services of personnel from other divisions of the State Board of Health are utilized as needs for these services arise.

The revision of the standards for hospitals and homes for the aged present quite different problems. In the case of the hospital standards, thinking is that hospitals should be classified as to category and size, taking into account available services, medical staffing, and other factors that make for better care to the patient. At the present time, the same kind of license is issued to all hospitals regardless of the number of beds or the diagnostic, surgical, obstetrical, etc., facilities available. It is anticipated that all of these factors will be taken into consideration in the proposed revision of the standards for hospitals and related institutions. Standards for construction apply to hospitals as well as standards for maintenance and operation.

Construction standards for homes for the aged are definitely a problem and none have been developed. Of the seventy-one licensed homes, 80 percent care for 20 or less patients, or residents each (46% ten beds or less, 34% eleven to twenty beds). These are all privately operated since neither state nor county homes come under the licensing law. From this it follows that 90% of the homes are family dwellings, converted to care for the aged. To attempt to establish construction standards for these would only tend to further complicate the establishment of facilities to care for the aged of which there is already a shortage. As a result, the standards for the operation and maintenance of homes for the aged fairly well define the physical plant.

This division, as in the past, is emphasizing the need for good hospital planning at the community level. Every effort has been made to advise individuals sponsoring the construction of new hospital facilities to develop their plans to meet their specific local needs. To this end the division offers consultive services as well as literature and other material on hospital planning and design.



BIG TIMBER—The Sweet Grass Community Hospital at Big Timber was opened to receive patients September 20, 1950. The 13-bed hospital was built at a cost of \$162,851.

23



STATE'S FIRST DISTRICT HEALTH DEPARTMENT—Montana's first local district health department was created in this biennium by the joint action of the county commissioners of Rosebud and Big Horn counties. The new health district is known as Montana Health District No 1 and provides full-time public health services for all residents of Big Horn and Rosebud Counties. Dr. B. K. Kilbourne was named district health officer and secretary for the new district board.

L. S. McLean, director*

Summary A policy and objective of the Montana State Board of Health is to assure the most effective fundamental public health services for the greatest number of people at the lowest cost.

In Montana this aim has been judged to be best accomplished through the development of a well-planned and well-organized program at the local level. This program should be administered by qualified, full-time public health personnel under the direction of the local board of health. The local public health staff and board of health should enjoy that degree of support in any community which results from active participation by an interested and informed citizenry.

To more rapidly and efficiently approach this objective, a Division of Local Health Services was deemed necessary within the structural organiza-

^{*}Appointed Jan. 19, 1951.

tion of the State Board of Health. In the Fall of 1950, the Division of Local Health Services was instituted on a full-time basis. Heretofore this function had been a responsibility of several persons along with other duties. In February, 1951, the present and first division director was selected.

During the biennium greater responsibility was delegated to local areas. For instance, the policy of the State Board making direct salary and expense payments to local public health workers was changed to that of making funds available to counties providing local health services.

Standards were adopted governing the eligibility for State Board of Health financial aid for local public health services.

The first district health department was established at the close of the biennium. Big Horn and Rosebud Counties combined to form this district.

An annual conference between the State Health and local health officers was initiated.

Program Developments For over fifty years Montana law (1) has provided for the creation and maintenance of public health services in counties, cities and towns throughout the state. Such coverage for Montana's citizens has been slow and spotty in realistic accomplishment. Today, only 1/6th of Montana's population enjoy full-time public health coverage as compared to that provided approximately 3/4th of the population of the United States. The accompanying map shows the extent to which the residents in Montana are currently being served by full-time, part-time or no local public health program.

Since 1901, state statute has required as a minimum that each political subdivision have a local board of health and a local health officer. But even these simple legal obligations are not being met in several instances. It was not until 1945 that the State Legislature passed an enabling act encouraging the provision, by counties and first-class cities, of full-time county or district health departments and their necessary boards of health. The primary problem of adequate development of a program to meet known local health needs should receive the active attention of all Montanans.

The State Board of Health has long recognized, studied and worked to fulfill its delegated responsibilities in this local development. In its earlier attempts to discharge these delegated functions, major emphasis was given to providing certain direct field services, along with intermittent and varied types of consultation, to the local areas. More recently, it has been the practice of the Board to make funds available to assist counties providing local public health services. These funds have been derived from state appropriations and federal health grants.

In previous fiscal periods these funds had been used to support certain public health activities through the direct payment to individual local public health workers, in part or in full for salaries and expenses in some county

Session Laws — Seventh Legislative Assembly House Bi'l No. 104, See's 9-38 incl.

and city programs. These local workers were also hired by the State Board of Health.

This shift in employment and payment of local personnel is in keeping with the Board's policy which places greater responsibility in local areas.

For more efficient and equitable distribution and utilization of these assistance funds, it became increasingly evident that certain uniform criteria were needed.

Therefore, during the early part of this biennium, standards governing eligibility for State Board of Health financial aid for local public health services were developed. These standards were adopted by the Board in April, 1951, and made effective beginning no later than July 1st of that year. Since then, State Board of Health financial aid has been allocated directly to local boards of health by contractual agreement following the local board's requests for these funds. It has been clearly and mutually understood that such funds were to be used to augment, rather than to substitute or replace, insufficient total funds from local resources.

A summary listing of all participative funds budgeted, as well as their expenditure, during 1950-51 is shown in table A. A comparative summary for that 12 month period (1951-52) immediately following the application of current standards is presented in table B. While more experience under this altered method of financial assistance to local public health programs will be required before objective analysis is attempted, it is evident already that improved utilization of available state and local funds is occurring. Also, this newer system is considered by competent authority to hold greater prospect far more rapid attainment of full-time public health coverage for all of the state.

A few revisions of these standards were adopted by the Board in April, 1952. The revisions further emphasize the flexibility and autonomy exercised by local boards of health in their recruitment and employment of local staff.

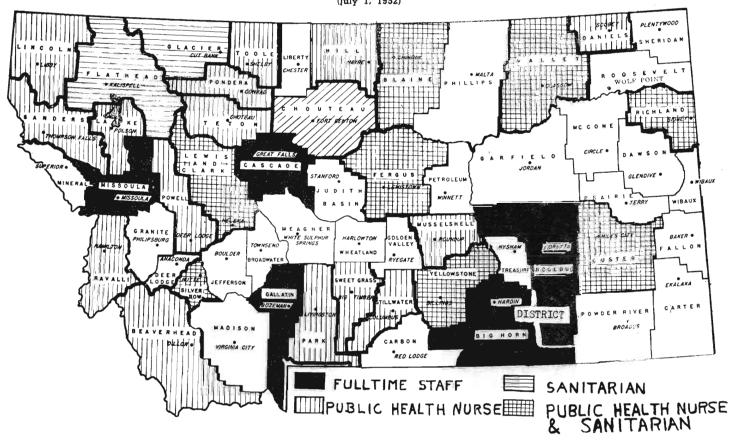
Several counties and a few cities in the state have totally supported their own public health personnel and services from available local tax sources (2). But more of these areas have minimum public health service and some have very little. The principles underlying such independent local financial support and management are praise-worthy. Local responsibility is basically endorsed and advocated by the State Board of Health. However, while the State Board con-



tinues to give its routine consultive and field services to these areas in a measure comparable to that received by state-aided jurisdictions, less cooperative program planning is apparent. This lack often results in a less effective distribution of existing services and frequently occasions a proportionately higher per capita cost for the service rendered the community.

² Flathead, Yel'owstone, Lewis and Clark, Beaverhead, Fergus, Silver Bow, Roosevelt and Deer Lodge counties, and the cities of Anaconda, Butte and Lewistown.

Budgeted Public Health Positions in Montana Counties (July 1, 1952)



- 132 -

As of July 1, 1950, there existed in this state only two full-time county or city-county health departments (3) as judged by nation-wide standards as defined by Montana Law and authoritative health groups (4, 5, 6). By July 1, 1951, this number had increased to four, following the reorganization and re-establishment of full-time departments in Missoula and Big Horn counties.

In addition to an increase from 2 full-time health officers at the beginning of the biennium to 4 at the close of the biennium, the number of local sanitarians increased from 12 to 17; local public health nurses employed at the beginning of the biennium totaled 63 and at the close of the biennium 60.

But of even further precedent-setting and noteworthy record, was the formation in June, 1952, of the first district board of health in Montana. As a result of the combined interest, effort and action of the Boards of County Commissioners of Big Horn and Rosebud counties, and respective medical. dental, school and other representative citizen groups in the two counties, Montana Public Health District No. 1 began operation July 1, 1952 (map on page 132 and table C). Although serving a combined white and Indian population of less than 17,000 people, the establishment of this full-time district health department, made possible by some financial support from the United States Indian Service and the State Board of Health, can be considered as having set the pattern for the future development of adequate public health coverage for many sparsely settled rural areas of our state. It can be practically demonstrated that, by combinations of geographically adjacent subdivisions, the creation and maintenance of similar district health jurisdictions in Montana is feasible. The Division of Local Health Services is equipped and prepared to provide the information, guidance and other reasonable assistance necessary to accomplish like developments in Montana.

In an attempt to ensure a firm legal basis for the current operation of existing local boards of health and their health officers and staff, this division undertook the compilation of membership of respective city and county boards of health and their medical health officers and staff. Some were found to be inactive and thus incomplete. A current file on City and County Boards of Health is being prepared in compliance with state statute. Already accomplished is a listing of all presently employed professional personnel on local and state staffs. Efforts will be made to keep this list up to date.

So that citizens may properly and voluntarily acquaint themselves with the health needs in their community, together with better means for their solution, a continuous correlated program of health information with assistance from the Division of Health Education is carried on by this Division. Pertinent news releases, factual talks and presentations to interested local and state organizations, the use of related films, exhibits, and other teaching materials constitute the routine functions in this health education program. A simple

*

S Cascade (incl. Gt. Falls) and Gallatin.
Sec. 69-802 Revised Codes of Montana.
The Local Health Dept." Amer. J. of P. H., Vol. 40, No. 1, Jan., 1950.
Health Grants Manual, Part 13-1. 5B, pg. 6.
U. S. Public Health Service— U. S. Children's Bureau.

and concise pamphlet depicting the need for, as well as the value and advantages of, county or multi-county full-time health departments was prepared and state-wide distribution attained.

During the Milk River flood emergency in the spring of 1952, the director of this division served temporarily as medical coordinator for the preventive services made available to the residents of the affected counties. The director also gave field assistance in the 1952 Cancer Lecture Series sponsored jointly by the Montana Medical Association and the State Board of Health. During several periods in the absence of the Board's Executive Officer, this Division Director assisted in that capacity.

This division played a primary role in conducting a two-day conference in Helena, May, 1952, for all local health officers of the state. By such conferences, participation between local public health administrators and members of the state staff enjoy additional opportunities for cooperative exchanges of information on public health activities, both existing and planned, to the end of providing improved services to the communities. Future conferences, to be held at least annually, were requested by those in attendance. The next one is planned for 1953.

New Program Plans

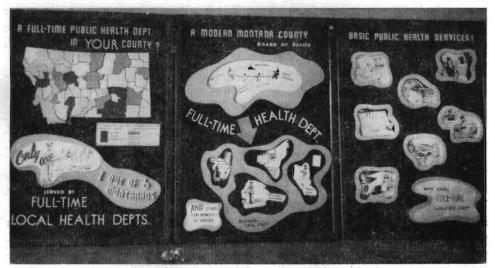
During the ensuing two-year period, this division plans to encourage the establishment of full-time local health departments, adequately staffed. Since, in many instances in Montana, the economic and social welfare of our Indian population is so intimately connected with their environmental and personal health status, the coordinated program must involve the United States Indian Service. Cooperative planning will be continued and additional forms of support from that agency can, with reasonable assurance, be anticipated.

A definite need has been recognized for a standing committee of local health officers to act in an advisory capacity to the State Board of Health and the state staff. As the result of the health officers conference, plans will be developed for establishing such a committee. Such an advisory committee can be of importance to the development and integration of state and local program policies and procedures.

In most counties the county commissioners also constitute the County Board of Health. It is also planned to stimulate the formation of a liaison committee composed of representatives of the Montana County Commissioners Association and members of the State Board of Health staff. Their satisfactory participation is essential to the proper interpretation of county public health programs now in operation or in prospect.

Since good public health administration requires continuous review and evaluation for the better delivery of effective service to the citizens of the state, practical and uniform method of periodic health activity reporting from the local jurisdiction is planned.

Significant Problems There exists a real need for much greater understanding of the real value of adequate state financial aid in the



4

A

LOCAL HEALTH SERVICES EXHIBIT—This three-panel exhibit was prepared to point up and explain local health services in Montana and to explain some of the basic advantages of a local health department.

development of basic public health activities and related program planning in all of the counties. Since adequate rural public health services are almost always more costly than those supplied to urban residents, substantial financial support by the state, helpful to the early institution of metropolitan health departments, is essential in the initial formation of local public health services in sparsely settled areas. Likewise, for the first few operating fiscal periods, substantive financial aid to allow for at least basic maintenance of these established services is required in the areas where the tax base is too meager to supply even a minimum of these essential services. With proper controls, as are now embodied in the standards to insure efficient use of state funds at the local level, reasonable assurance can be given that available State Board of Health equalizing funds will be judiciously utilized. Experience indicates that, once basic public health services have been enjoyed by a community, the community voluntarily subsequently assumes almost total local continuing responsibility for the routine operation of its own services.

During these times of national preparedness against the threat of domestic and international hostility, the maintenance of organized basic public health services in each community is vital in the total civilian effort necessary to the national defense. There needs to be a greater general recognition that effective federal-state, inter-state and state-local cooperation is now essential to the establishment and operation of an effective public health program serving all of the 56 counties in this state.

While much has been done already toward the better integration and coordination of local-state administrative and operational practices, more effort along these lines is indicated. More meaningful evaluation of activities

currently being carried on by both local and related state services allows for better planning. Through its Division of Local Health Services the State Board of Health can more effectively provide the leadership necessary to such integration and coordination.

Associated with this need is our responsibility toward the better implementing of existing state and local programs of recruitment of new public health workers, as well as for their pre-employment and in-service training including, where necessary, educational leave through the assistance and under the sponsorship of the State Board of Health.

Underlying all progress towards the attainment of adequate local public health services in Montana, as elsewhere, is the presence of a real interest in, and sufficient understanding of, what constitutes a good public health program by Mr. Average Citizen. He is the primary "provider" and ultimate "consumer." Proper appreciation of the local problems and benefits involved in the establishment and maintenance of efficient public health services will prevail only when a majority of our people are sufficiently informed to allow their active participation. Experience has shown that one of the best methods to accomplish such participation is through the formation of an effectively functioning community health council or committee. Here again, much has already been done in several areas of our state. These and many other areas require continuing and additional health education know-how as provided by qualified agency staffs at the state level. Then these community groups, composed of individuals representing local civic, fraternal, occupational, voluntary health and other lay organizations, become the instrument for expressing the will of the people—concrete evidence of the democratic process in action.

Related Activities

As a member of the Montana Medical Association's committee on Rural Health, the director of this division assisted in stimulating the participation of the membership of each district Medical Society in community health projects; also, he was selected as a representative to the American Medical Association's annual Rural Health Conference in Denver, 1952.

The director provided technical service to the National Health Council at its exhibit during the 1951 American Public Health Association annual convention in San Francisco.

He represented the Montana State Board of Health at the annual meeting of the Association of State and Territorial Directors of Local Health Services at Springfield, Illinois in March, 1951.

TABLE A LOCAL—STATE PARTICIPATING BUDGETS and EXPENDITURES Montana Public Health Services, 1950-51

| | BUDGETED FUNDS | | | | | | | | | | EXPE | NDI: | TURES | | | |
|--------------|--------------------------|---------|-------------------|---------|-------|----------|------|---------|------|------------|------|-------------|-------|------------|--------------|-------|
| | LOCALITY | Popula- | Taxable** | LO | CAL | STAT | E | TOT | AL | LOCA | | STATE | | TO | TAL | |
| Full- | time H. D. | tion* | Valuation | Amount | % | Amount | % | Amount | Per. | Amount % | (1) | Amount % | (2) | Amount | Per. Cap. | % (3 |
| | Cascade City-County) | 52,408 | 36,918,930 | 53,025 | 80.9 | 12,569 | 19.1 | 65,594 | | 52,046.83 | 82 | 11,611.65 | 18 | 63,658.48 | | 97.0 |
| 2. (| Gallatin City-County) | 21,718 | 16,026,168 | 21,530 | 72.6 | 8,140 | 27.4 | 29,670 | 1.37 | 18,661.14 | 72 | 7,251.88 | 28 | 25,913.02 | 1.19 | 87.3 |
| | Sub-Total | 74,126 | 52,945,098 | 74,555 | 78.3 | 20,709 | 21.7 | 95,264 | 1.29 | 70,707.97 | 80 | 18,863.53 | 20 | 89,571.50 | 1.21 | 94.0 |
| Part- | -time P. H. Services | | | | | | | | | | | | ~- | | | |
| 1.] | Big Horn | 9,799 | 6,853,312 | 18,100 | | 6,060 | | , | 2.47 | 7,400.48 | | , | 25 | 9,870.78 | 1.01 | |
| 2. (| Custer | 12,619 | 8,944,627 | 5,850 | | , | 24.8 | 7,786 | .62 | 4,246.59 | | -, | 33 | 6,294.78 | .50 | 80.9 |
| 3. | Fergus | 13,963 | 12,972,075 | 13,620 | 82.3 | 2,930 | 17.7 | 16,550 | 1.19 | 11,425.42 | | -,000000 | 20 | 14,255.42 | | |
| 4.] | Lewis & Clark | 24,418 | 19,040,836 | 17,090 | 90.1 | 1,870 | 9.9 | 18,960 | .78 | 15,925.66 | 89 | 1,992.71 | 11 | 17,918.37 | .73 | 94.5 |
| 5. | Missoula | 34,982 | 17,503,908 | 39,980 | 81.1 | 9,320 | 18.9 | 49,300 | 1.71 | 28,581.19 | 80 | 7,063.07 | 20 | 35,644.26 | 1.02 | 72.3 |
| 6. | Beaverhead | 6,417 | 6,461, 883 | 2,580 | 100.0 | | | 2,580 | .40 | | | | | | | |
| 7. | Blaine | 8,473 | 7,275,227 | 5,560 | 78.8 | 1,500 | 21.2 | 7,060 | .83 | 1,834.83 | 60 | 1,245.56 | 40 | 3,080.39 | .36 | 43.6 |
| 8. I | Hill | 14,473 | 10,347,122 | 1,320 | 47.5 | 1,455 | 52.5 | 2,775 | .19 | 1,320.00 | 48 | 1,455.00 | 52 | 2,775.00 | .19 | 100.0 |
| 9. I | Lake | 13,767 | 7,753,873 | 3,412 | 56.3 | 2,638 | 43.7 | 6,050 | .44 | 3,411.70 | 56 | 2,638.28 | 44 | 6,049.98 | .44 | 100.0 |
| 10. | Lincoln | 8,672 | 5,935,371 | 1,553 | 54.0 | 1,321 | 46.0 | 2,874 | .33 | 1,552.50 | 54 | 1,320.64 | 46 | 2,873.14 | .33 | 100.0 |
| 11. | Musselsheil | 5,390 | 3,880,686 | 1,560 | 50.0 | 1,560 | 50.0 | 3,120 | .58 | 967.50 | 43 | 1,290.00 | 57 | 2,257.50 | .42 | 72.4 |
| 12. | Pondera | 6,429 | 7,473,187 | 1,440 | 50.0 | 1,440 | 50.0 | 2,880 | .45 | 240.00 | 50 | 240,00 | 50 | 480.00 | .07 | 16.6 |
| 13. | Ravalli | 13,021 | 5,812,798 | 1,500 | 49.0 | 1,560 | 51.0 | 3,060 | .24 | 1,500.00 | 49 | 1,560.00 | 51 | 3,060.00 | .23 | 100.0 |
| 14. | Richland | 10,343 | 5,738,312 | 2,498 | 50.0 | 2,498 | 50.0 | 4,996 | .48 | 2,092.50 | 45 | 2,555.00 | 55 | 4,647.50 | .45 | 93.0 |
| 15. | Sanders | 6,926 | 1,326,946 | 1,380 | 50.0 | 1,380 | 50.0 | 2,760 | .40 | 945.00 | 54 | 820.00 | 46 | 1,765.00 | .25 | 63.9 |
| 16. | Sheridan | 6,623 | 5,653,321 | 698 | 50.3 | 690 | 49.7 | 1,388 | .21 | 698.28 | 50.3 | 690.00 | 49.7 | 1,388.28 | .21 | 100.0 |
| 1 <i>7</i> . | Silver Bow | 47,992 | 23,152,075 | 7,800 | 59.9 | 5,220 | 40.1 | 13,020 | .27 | 1,935.00 | 27 | 5,220.00 | 73 | 7,155.00 | .15 | 54.9 |
| | Teton | 7,130 | 8,150,947 | 1,691 | 50.9 | 1,627 | 49.1 | 3,318 | .47 | 1,691.25 | 51 | 1,627.50 | 49 | 3,318.75 | .47 | 100.0 |
| | Valley | 11,320 | 8,625,641 | 1,645 | 51.4 | 1,560 | 48.6 | 3,205 | .28 | 1,645.00 | 51.4 | 1,560.00 | 48.6 | 3,205.50 | .28 | 100.0 |
| | Yellowstone | 55,743 | 39,204,702 | 13,547 | 92.9 | 1,040 | 7.1 | 14,587 | .26 | 13,547.50 | 92.9 | 1,040.00 | 7.1 | 14,587.50 | .26 | 100.0 |
| - 5 | Sub-Total | 318,500 | 217,106,849 | 142,82 | 1 75 | 47,599 | 25 | 190,423 | .60 | 100,960.40 | 71.8 | 3 39,666.35 | 28.2 | 140,626.75 | .44 | 73.8 |
| , | TOTAL | 392,626 | 270,051,947 | 217,379 | 76. | 1 68,308 | 23.9 | 285,687 | .73 | 171,668.37 | 74,6 | 58,529.88 | 25.4 | 230,198.25 | .59 | 80.6 |

^{* 1950} Census ** 1950

 [%] of local amount budgeted
 % of state amount budgeted.
 % of total amount budgeted.

LOCAL—STATE PARTICIPATING BUDGETS & EXPENDITURES
Montana Public Health Services, 1951-52

| BUDGETED FUNDS | | | | | | | | EXPENDED | | | | | | | | |
|----------------|--|------------------|-------------|---------|------|---------------|------|----------|--------------|---------|-------|--------|-------|---------|--------|--------------|
| LC | CALITY | Popula- tion* | Taxable** | LOCA | L | STA | TE | TOT | ΊΛL | LO | CAL, | STA | ATE | | TOT. | AL |
| Fıı | ll-time H. D. | tion | Valuation | .\mount | % | Amount | % | Amount | | Amount | % (1) | Amount | % (2 |) Amoun | t % (3 |) Per. |
| 1. | Big Horn County | 9,799 | 6,855,312 | 20,020 | 77.0 | 5,908 | 23.0 | 26,000 | Cap. 2.65 | 17,482 | 87.3 | 5,222 | 87.3 | 22,704 | 87.3 | Сар. 2.32 |
| 2. | Cascade(City-County) | 52,408 | 36,918,930 | 60,982 | 85.6 | 10,240 | 14.4 | , | | 58,661 | | 9,868 | | 68,529 | | |
| 3. | | 21,718 | 16,026,168 | 25,988 | 78.4 | 7,17 2 | 21.6 | 33,160 | 1.52 | 24,315 | 93.5 | 6,699 | 93.4 | 31,014 | 93.5 | 1.43 |
| 4 | Missoula(City-County) | 34,982 | 17,503,908 | 38,499 | 72.0 | 8,498 | 18.0 | 46,997 | 1.34 | 33,213 | 86.2 | 7,289 | 85.7 | 40,502 | 86.1 | 1.16 |
| Pa | Sub-Total rt-time P. H. Services | 118,907 | 77,304,318 | 145,489 | 82.1 | 31,890 | 17.9 | 177,379 | 1.49 | 133,671 | 91.8 | 29,078 | 91.2 | 162,749 | 91.7 | 1.37 |
| 1. | Blaine County | 8,473 | 7,275,227 | 6,490 | 79.1 | 1,710 | 20.9 | 8,200 | .96 | 1,388 | 21.4 | 367 | 21.5 | 1,755 | 21.4 | .21 |
| 2. | Custer County | 12,619 | 8,944,627 | 6,380 | 75.8 | 2,035 | 24.2 | 8,415 | .67 | 4,334 | 67.9 | 1,384 | 68.0 | 5,718 | 67.9 | .45 |
| 3. | Hill County | 14,281 | 10,347,122 | 3,010 | 65.0 | 1,620 | 35.0 | 4,630 | .32 | 633 | 21.0 | 341 | 21.0 | 974 | 21.0 | .07 |
| 4 | Lake County | 13,767 | 7,753,873 | 6,196 | 71.3 | 2,500 | 28.7 | 8,696 | .63 | 6,068 | 97.9 | 2,500 | 100.0 | 8,568 | 98 5 | .62 |
| 5. | Lincoln County | 8,672 | 5,935,371 | 3,400 | 73.0 | 1,350 | 37.0 | 4,650 | .54 | 2,835 | 83.4 | 1,049 | 839 | 3,884 | 83.5 | .45 |
| 6. | Musselshell County | 5,392 | 3,880,686 | 1,891 | 57.4 | 1,848 | 49.4 | 3,739 | .69 | 1,503 | 79.4 | 1,468 | 79.4 | 2,971 | 79.4 | .55 |
| 7. | Pondera County | 6,429 | 7,472,187 | 2,910 | 62.6 | 1,740 | 37.4 | 4,650 | .72 | 2,819 | 96.9 | 1,684 | 96.8 | 4,503 | 96.8 | .70 |
| 8. | Ravalli County | 13,021 | 5,812,698 | 2,425 | 55.0 | 1,950 | 45.0 | 4,375 | .33 | 2,453 | 101.1 | 1,950 | 100.0 | 4,403 | 100.6 | .34 |
| 9. | Richland County | 10,343 | 5,738,312 | 5,926 | 70.3 | 2,500 | 29.7 | 8,426 | .81 | 3,733 | 62.9 | 1,578 | 63.1 | 5,311 | 63.0 | .51 |
| 10. | Sanders County | 6,926 | 6,326,946 | 2,710 | 69.3 | 1,200 | 30.7 | 3,910 | .56 | | | | | , | | |
| 11. | Sheridan County | 6,623 | 5,653,321 | 2,301 | 60.8 | 1,484 | 39.2 | 3,785 | .57 | 1,051 | 45.6 | 678 | 45.7 | 1,729 | 45.6 | .26 |
| 12. | Teton County | 7,130 | 8,150,947 | 2,935 | 57.0 | 2,215 | 43.0 | 5,150 | .72 | 2,225 | 75.8 | | 85.8 | , . | 80.1 | .58 |
| 13. | Valley County | 11,320 | 8,625,641 | 6,210 | | 2,500 | 28.7 | 8,710 | .77 | , | 82.2 | , | 82.2 | | 82.2 | .63 |
| | Sub-Total | 124,996 | 91,918,058 | 53,384 | | 24,552 | _ | 77,936 | .62 | | 64.4 | | 69.1 | | 65.9 | .41 |
| | TOTAL · | 243,903 | 169,222,376 | 198,874 | | 56,442 | 22.2 | 255,316 | 1.05 | | 84.5 | | 81.5 | 211,608 | 82.8 | .87 |

^{* 1950} Census /* 1950

^{(1) %} of local amount budgeted.
(2) % of state amount budgeted.
(3) % of total amount budgeted.

TABLE C LOCAL—STATE PARTICIPATING BUDGETS
Montana Public Health Services, 1952-53

| | | | LO | CAL | STAT | CE | TOTAL | | |
|------------------------------|---------|-------------|------------|--------------|-----------|------|------------|------|--|
| LOCALITY | Popula- | Taxab!e** | Amount | % | Amount | % | Amount | Per. | |
| Full-time H. D. | tion* | Valuation | | | | | | Cap. | |
| 1. Cascade (City-County) | 52,408 | 36,918,930 | 63,525.20 | 86.1 | 10,240 | 13.9 | 73,765.20 | 1.41 | |
| 2. Gallatin (City-County) | 21,718 | 16,026,168 | 28,038 | 79.6 | 7,172 | 20.4 | 35,210 | 1.62 | |
| 3. Missoula (City-County) | 34,982 | 17,503,908 | 42,216 | 83.2 | 8,498 | 16.8 | 50,714 | 1.45 | |
| 4. Mont. P. H. Dist. No.1*** | 16,328 | 14,483,805 | 31,908 | 75.8 | 10,230 | 24.2 | 42,210 | 2.58 | |
| Sub-Total | 125,436 | 85,932,811 | 165,759.20 | 82.1 | 36,140 | 17.9 | 201.899.20 | 1.61 | |
| Part-time P. H. Services | | | | | | | | | |
| 1. Blaine County | 8,473 | 7,275,227 | 6,790 | 79 .9 | 1,710 | 20.1 | 8,500 | 1.00 | |
| 2. Custer County | 12,619 | 8,944,627 | 7,000 | 77.1 | 2,075 | 22.9 | 9,075 | .72 | |
| 3. Hill County | 14,281 | 10,347,122 | 3,026.40 | 65.0 | 1,620.60 | 35.0 | 4,656 | .33 | |
| 4. Lake County | | 7,753,873 | 7,12520 | 74.1 | 2,500 | 25.9 | 9,625.20 | .75 | |
| 5. Musselshell County | 5,392 | 3,880,686 | 2,650 | 57.6 | 1,950 | 42.4 | 4,600 | .85 | |
| 6. Pondera County | 6,429 | 7,473,187 | 3,233 | 62.6 | 1,932 | 37.4 | 5,165 | .80 | |
| 7. Ravalli County | 13,021 | 5,812,798 | 2,425 | 55.4 | 1,950 | 44.6 | 4,375 | .33 | |
| 8. Richland County | 10,343 | 5,738,312 | 6,586.44 | 72.5 | 2,500 | 27.5 | 9,086.44 | .88 | |
| 9. Sanders County | 6,926 | 6,326,946 | 2,922 | 69.2 | 1,300 | 30.8 | 4,222 | .61 | |
| 10. Teton County | 7,130 | 8,150,947 | 3,175 | 57.2 | 2,375 | 42.8 | 5,550 | .78 | |
| 11. Valley County | 11,320 | 8,625,641 | 9,220 | 78.7 | 2,500 | 21.3 | 11,720 | 1.03 | |
| Sub-Total | 109,701 | 80,329,366 | 54,153.04 | 70.7 | 22,421.60 | 29.3 | 76,574.64 | .70 | |
| TOTAL | 235,137 | 165,262,177 | 219,912.24 | 78.9 | 58,561.60 | 21.1 | 278,473.84 | 1.18 | |

^{* 1950} Census. ** 1950. ***includes Rosebud and Big Horn counties.



NURSING WORKSHOP—The nurses above are pictured in a class at the Tuberculosis Workshop in Butte in 1950, planned and conducted under the joint sponsorship of the Montana Tuberculosis Association and the State Board of Health. The workshop was designed to give instruction in the care of the tuberculosis patient.

PUBLIC HEALTH NURSING

Wava L. Dixon, director*



Summary

This division has been given the responsibility, by the State Board of Health, to carry out definite services in accordance with public health laws and board regulations. The major responsibilities of the division are: (1) Recruitment; (2) Technical supervision of all Public Health Nursing; (3) Maintenance of standard qualifications, including review of credentials; and (4) Coordination of all public health nursing services.

At the beginning of the biennium, handicapped by two consultant vacancies, this division assumed some of the administrative activities of two other programs: Maternal & Child Health and Crippled Children. These two programs were without directors until April 1951. Also, due to

*Acting director Sept. 6, 1950 to July 9, 1951; appointed director July 10, 1951. Lita L. Korbe division director until Aug. 30, 1950.

additional staff vacancies, the Hospital Nursing consultant was assigned parttime to the Hospital Facilities division.

Special consultant services to Maternal & Child Health, Tuberculosis, and Orthopedics & Hospital Nursing were provided by the Public Health Nursing staff. Consultation was provided other divisions of the Board and agencies where organized nursing for communities is a part of the division or agencies' program, or is needed to complete the services of the division or agency.

New Program Plans With one vacancy on the consultant staff filled and the possibility of filling the other, the activities of the Division will be increased. In-service education will be planned on a regional basis with the full-time health department as a nucleus in each area. The public health nurses working in the counties without full-time health departments will be considered with the health department staffs for the staff education program.

In the field of maternity, the plans for expectant mothers' classes in at least four areas have been established. Personnel will be available to increase this number if other areas wish to begin a similar project.

Supervisory services will be increased. It is hoped that minimum criteria for adequate supervision can be met. This supervision is essential to a successful training program; the carrying out of nursing services in areas without full-time Health Departments; the professional growth of the nurses and for the evaluation of the nurses' services for personnel records.

A complete revision of the Policy Manual for Montana Public Health Nurses and their report forms is demanded in view of increased activities in local programs. This increased activity in local programs is a reflection of the increased activities of other health workers as well as that of the public health nurse.

Program Developments Recruiting activities for public health nurses were increased in this biennium with greater emphasis on the position reclassifications and salary adjustments. Reclassifications resulted in a more realistic description of positions and requirements. The salary adjustments increased recruiting possibilities by placing Montana nursing positions on a stronger competitive basis. Conferences with the Joint Merit System Council led to a better understanding of the personnel needs and the interpretation of the educational and experience background of nurses for evaluation of credentials. In addition, the listing of vacancies has been kept up to date and the Merit System Council has put more emphasis on making vacancies known to local agencies as well as state agencies, universities and schools of nursing. Efforts to recruit through Montana schools of nursing contacts by staff members of this division has continued in this biennium.

Through a State Board of Health intra-agency committee on training, recommended criteria for a public health nurse training program has been



CLASSES FOR MOTHERS—Classes for expectant mothers, developed with the help and cooperation of local physicians, point up the importance and need for mothers going to their family physicians early in pregnancy. The mothers-to-be receive instruction designed to prepare her, as she goes through pregnancy, to approach the birth of her child with confidence—a confidence founded on correct medical information rather than superstitions and fear. Miss Malinda Wolkow, Pondera county public health nurse, is pictured above conducting a class for expectant mothers.

5

submitted. It is believed the more equitable consideration in the training program for nurses will increase recruitment possibilities. There is still a need for more planning for training-with local communities as well as at the state level—in relation to the demands for nurses and the funds available for their training.

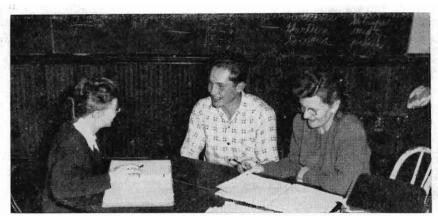
On January 1, 1952, only a little over 50% of the nurses employed in Montana public health nursing positions had completed one or more years in an approved public health nursing program of study. In addition to this group, there were a few nurses holding public health nursing positions who because of their experience and, for various reasons, were not being considered for training. Actually, considering the number who have begun their training and those employed who should be considered as potential trainees, 28.6% of all public health nurses employed in Montana (18 of the total of 63), should be considered in need of additional training to improve the educational status of the group. The percentage of nurses qualified in public health nursing decreased slightly during this biennium; nine nurses were trained in public health nursing in the biennium. The necessity for increased emphasis on a training program is evident.

Technical supervision to all nurses, directly to those in areas without full-time health departments and through local health department directors, required changing activities due to the staff vacancies in this division. More emphasis was placed on group activity supervision rather than on the more frequent individual conferences.

The number of local nursing services varies from time to time, but during most of this biennium there were four full-time health departments and 26 county and school districts requiring public health nursing service. The need for supervision was not lessened in this biennium; one of the experience requirements for public health nurses for most positions is that her experience be under adequate supervision.

The nursing consultants and the division director have continued to assist with the orientation of new nurses and the evaluation of program developments. Twenty-eight new public health nurses were employed in this biennium. It has been impossible for this division to meet all of the demands for consultation services required in special fields of nursing along with the supervisional services required of the Division of Public Health Nursing; emphasis has continued toward nursing services to the family, regardless of the reason for the initial contact. Changing concepts in public health nursing service has decreased the number of home visits and increased the activities of Montana's public health nurses with groups, conferences and with other workers sharing the responsibilities of public health programs and health counseling in schools.

In the first nine months of this biennium, prior to the employment of the Director of Child Health Services, public health nursing carried out joint activities with the State Department of Public Instruction, school



GUARDING STUDENTS' HEALTH—Public health nurses in Montana work with teachers and parents in an effort to guard the student's health. Pictured above is a public health nurse (left) in a health-evaluation conference talk with a student and his teacher at Proctor. The public health nurse works closely with the family physician and dentist to provide friendly counsel to the school-age child and his parents.

administrators, and teacher training institutes, in an effort to develop better programs for the health of the school-age child.

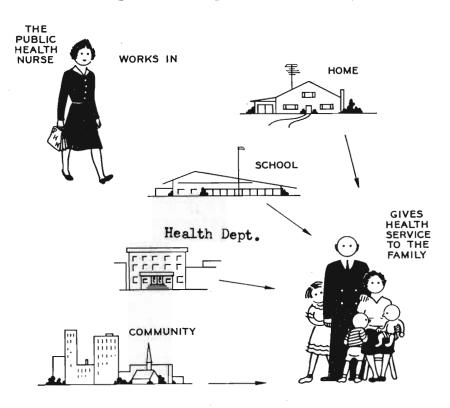
Local public health nursing services in four areas (Billings, Great Falls, Missoula, Butte) continued their staff educational programs under the guidance of the staff of the Mental Hygiene Clinic. These programs were based on factors that influence the behavior of children, parents, teachers, and other workers in the health program for the school-age child. Also, local conferences were conducted with health education personnel to consider the problems as well as the planning of health programs related to the school-age child. School superintendents, principals, interested teachers and the local public health nurses were included in these local meetings.

8

8

An evaluation of local nursing services in Montana shows that as school health programs have developed, nursing services requested of this division reflect better planning. This improved planning has done much to eliminate non-productive home visiting by the public health nurse.

In order to function effectively, the program of the Cerebral Palsy Center at Billings requires public health nursing services. Yellowstone County's public health nurses have served as staff nurses for case conferencing, organization and management of out-patient clinics as well as visiting the



children in their homes in the county. Until July 1951 only 13 counties were served by the Cerebral Palsy Center; with the expansion of the program to serve the entire state, a conference on the needs of the cerebral palsied child, as related to the needs of all children, was conducted at the Billings center for all Montana public health nurses. As a follow-up of the conference, assistance was extended to all local nurses in Missoula and Great Falls through local health department staff education programs.



STUDY TECHNIQUES-O. V. Crumbacker, rehabilitation counselor with the Bureau of Vocational Rehabilitation, and Mrs. Vivian DeVine (right) director of nursing at Shodair Crippled Children hospital, are pictured at the rehabilitation meeting for nurses in Billings (June 1952) as they explained the use of the latest rehabilitation equipment to Mrs. Madeline Highbaugh (left), Big Horn county public health nurse, and Miss Mary McClafferty, instructor in nursing arts at St. Vincent's hospital in Billings. The meeting was one of five conducted jointly by the State Board of Health, Shodair Crippled Children's Hospital, the Bureau of Vocational Rehabilitation and the State Mental Health clinics.

The orthopedic nursing consultant attended the Institute of Physical Need and Rehabilitation at New York University in the spring of 1952. Cooperating with the Bureau of Vocational Rehabilitation, Shodair Hospital and the state Mental Hygiene Clinics, she conducted five meetings for nurses on the subject of "Rehabilitation Methods for Nurses." Hospital and public health nurses, physicians, rehabilitation personnel and other interested people attended the meetings in Helena, Billings, Missoula, Butte and Great Falls. The orthopedic nursing consultant in this biennium continued to assist with improving pre-clinic arrangements for the orthopedic clinics and, cooperating with local public health nurses, welfare departments and volunteers, worked to stabilize the activities in the 15 clinic centers.

The maternal and child health nursing consultant vacancy was filled in March, 1952. This consultant reviewed the nursing activities in the maternal and child health program and, in response to the

needs revealed by this review, started a program of promotion and organization for expectant mothers classes and initiated a study, and evaluation of well-child conferences in cooperation with the division of Child Health Services. Reports from local public health nurses indicate that approximately 85% of their time is devoted to mothers and children.

In this biennium the hospital nursing consultant continued her work in the promotion of better hospital nursing care for Montana mothers and infants. She provided student nurses with approved materials on the "Nursing Care of the Premature Infant;" she conducted classes with students in each school of nursing in each year of this biennium; she organized graduate nurse staffs in six hospitals for discussion on nursing care of mothers and

infants; and she continued the promotion of terminal sterilization of infant formulae in all Montana hospitals with maternity services with the result that in this biennium 14 more hospitals adopted this method.

During the biennium this consultant adjusted her services to include the activities required of the Hospital Facilities Division in the Licensure Program for hospitals and nursing and/or boarding homes for the aged. During her activities with the licensure program, the amount of time devoted to the maternity program was limited but was continuous. The number of hospitals and homes for the aged served under the licensure program has been increased approximately 80 and now includes all of the licensed hospitals and homes for the aged in Montana. Working with the Montana Dictetic Association and the Extension Service, the hospital nursing consultant has planned a manual to be used in those small hospitals in Montana without dietitians.

The needs and demands for service from this division have been great in those areas of the state without full-time health departments to establish workable policies for communicable disease programs. Assistance, on an individual basis has been extended to these areas in communicable disease programs.

Emphasis has continued in the nursing aspects of the tuberculosis control program. Technical leadership has been extended by this division toward the establishment of a Montana Committee on the Nursing Care of the Tuberculosis. All workers—voluneer, professional and others—involved



AVOIDING FEEDING PROBLEMS—This Montana public health nurse is demonstrating formula preparation techniques to a class of expectant mothers. Such instruction enables these mothers to better care for their babies by avoiding many infant feeding problems.

逐

in the state tuberculosis control program, were brought together for four one-day conferences and a one-week workshop in the biennium to consider the nursing care of the tuberculous and problems relative to the care of the tuberculous.

In May of 1952 a field nurse was added to this division and assigned to the disease control program, primarily for follow-up of tuberculous, cancer and heart disease cases discovered through the Chest X-ray program. Her activities have been, and will continue to be primarily devoted to areas without local health departments or public health nursing services. She is also assisting in the development of better understanding and cooperation by all persons and agencies concerned with case management, especially of the tuberculous.

Significant Problems 1. Need for more organized county or district health departments with medical leadership.

- 2. Need for more integartion of nursing in studies, plans and program developments within the health department activities.
- 3. Need for studies of public health nursing activities to eliminate non-productive activities.
- 4. Inadequate number on staff makes essential frequent contacts with local personnel impossible.
- 5. Need for more understanding by all public health workers of the role of the total nursing program.

Related Activities Members of the staff of the Division of Public Health Nursing participated in the activities of the following committees:

- 1. State Committee on "The Care of the Tuberculous."
- 2. Committee on Public Health Affiliation for Student Nurses.
- 3. State Committee on Practical Nursing.
- 4. Committee on Nurse Recruitment of the Montana State Nurses' Association.
- 5. Committee on Nursing Resources of the Montana State Nurses' Association.

HISTORY (Continued from Page 10)

The need for full-time local health officers was recognized early. In the 1911-1912 biennial report of the Board, the executive secretary recommended that "counties should combine when small and appoint a single Health Officer." By 1914 there was one such merger: Billings and Yellowstone county with Dr. L. W. Allard, Billings, as city-county health officer.

"If it were possible to divide the state into districts and have a health officer for each district who could devote his whole time to health work, the efficiency of this department would be greatly increased," Dr. W. F. Cogswell, executive secretary of the State Board of Health wrote in 1914. Dr. Cogswell was named executive secretary, to follow Dr. Tuttle, in December of 1912. Thirty-one years after Dr. Cogswell made this observation, legislation was passed, in 1945, making district health departments permissible in Montana. In view of this recognized need for local health departments, a division of Local Health Services was created by the State Board of Health and a director was appointed in 1951. In 1951 Cascade, Gallatin, Big Horn and Missoula counties had established full-time local health departments.



1898 TOURIST ACCOMMODATION—This Silver City hotel, with its convenient pump (arrow), is representative of the type lodging tourists could expect to find in Montana around the turn of the century. As early as 1913 the State Board of Health adopted regulations prohibiting the use of a common or public drinking cup and a common roller towel in hotels, restaurants, lodging houses or other public places. Today, local sanitarians and State Board of Health sanitarians work together in checking restaurants and tourist lodges to safeguard public health. Thanks, in no small part to the improved sanitary conditions of the state's many restaurants, hotels and tourist lodges, Montana's tourist trade is one of the state's most important businesses.

à

During the early years of public health in Montana, as in other states, the problems of communicable disease control and general sanitation were of paramount importance.

In 1906, Dr. Tuttle wrote: "The floors of the day coaches (of the trains) are covered with all kinds of filth. The tobacco chewer spits on the floor, the little boy throws his peanut hulls on the floor, the consumptive expectorates on the floor. All this filth and trash accumulates until the division point is reached. Then comes the brakeman with his broom.

"He is anxious not to lose a minute at the end of his run and he brushes this dread filth into a dust that is simply stifling; and this dust is laden with the germs of tuberculosis. The passengers must breathe it; they can not get away from it; they can not get out of the car, and the law says they must not kill the brakeman." (1)

There were many cases of smallpox and typhoid in Montana in 1902 but Rocky Mountain spoted fever had the highest mortality—nearly 80 per cent. That year 18 persons contracted spotted fever; 15 of them died.

Probably one of Montana's greatest public health services to the nation and the world was the initiation of Rocky Mountain spotted fever investigations in March 1901, less than a month after the creation of the State Board of Health. This research, initiated by the Board, resulted, ultimately, in the discovery of the causative agent and the development of an effective vaccine.

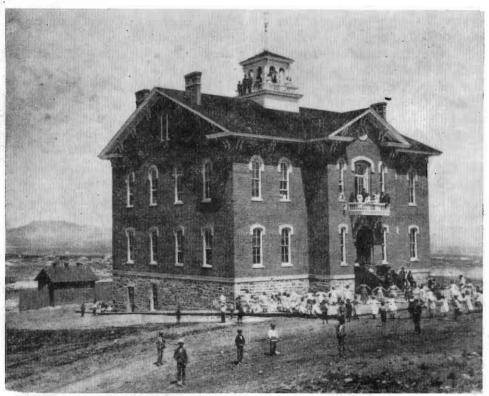
Many believed, in 1901, that spotted fever was caused by people drinking early spring runoff water or water from irrigation ditches. It was Dr. Early Strain, Great Falls physician, that first speculated "Could the ticks be the cause of spotted fever: If the mosquito can carry yellow fever why can't ticks carry spotted fever?" Dr Strain worked closely with the Board in the early years of spotted fever studies.

The legislature, in 1913, created the State Board of Entomology to help in the coordination of the battle against the dread fever. This was composed of the state entomologist as chairman, the executive officer of the State Board of Health as secretary, and the state veterinarian. The Board of Entomology conducted early spotted fever experiments in a woodshed lab near Victor in 1919 and 1920.

The struggle against spotted fever was long and discouraging. Dr. Arthur Howard McCray, bacteriologist for the State Board of Health, was one of several public health workers that gave their lives in Montana's fight to conquer the killing fever. Dr. McCray contracted Rocky Mountain spotted fever while conducting experiments with the infectious material. He died June 14, 1919.

Limited state funds available to the Board restricted the investigation of spotted fever in Montana, but others helped in the studies: U. S. Bureau of Entomology, U. S. Public Health Service, U. S. Department of Agriculture,

¹ Esther G. Price, Fighting Tuberculosis in the Rockies



MODERN IN 1901—This Helena school building, built about the time the Montana legislature created the State Board of Health, 1901, was modern for its day. In 1917 the state legislature gave the Board of Health the responsibility of reviewing all school building plans for acceptable sanitary planning. As a result schools built today in Montana are planned with attention to good ventilation, lighting, heating and other elements of sanitation essential to the health of the school-age child.

Montana State College, University of Minnesota, other state health departments and many private physicians throughout the state.

Dr. Tuttle, in his 1904-06 biennial report, pointed out that appropriations made by the state for the preservation of the health of cattle, sheep and horses indicated "the value of the people is placed at about 1/88 that of the lower animals. We have made an appropriation for the protection of the health of our people, and have levied a tax for the protection of our fish and game, and thereby declared that our fish and game are worth seven and one-half times as much as our people. Do the people of Montana believe that?"

With the discovery of the spotted fever causiative agent in 1919, Montana's legislature increased its appropriation for the study from \$5,000 to \$8,000. By 1922 a protective vaccine had been developed.

In the early years of the spotted fever studies, experiments were conducted in a wood shed near Victor in 1920 and in an abandoned school house

west of Hamilton in 1921. Montana's 1927 legislative assembly appropriated \$60,000 to build a laboratory at Hamilton for the studies.

When it became apparent in 1930 that the investigations of the fever could not be confined to Montana, the U. S. Public Health service offered to purchase and expand the state laboratory at Hamilton. On February 3, 1932 the U. S. Public Health Service purchased the larboratory for \$68,757; today the laboratory represents an investment of \$2,500,000 and employs a staff of 140.

Tuberculosis control has been a major concern of the Board since 1907. Dr. Tuttle was unable to get the legislature to approve legislation making tuberculosis a reportable disease. But when the legislation was approved in 1913, Dr. Cogswell, then executive secretary of the Board, said, "I never could have done it had it not been for the persistent pioneering Dr. Tuttle had done before me."

In 1916 tuberculosis took 521 lives in Montana; by 1942 the yearly tuberculosis toll had been reduced to 195. In 26 years the state's tireless public health workers cooperating with private physicians were saving approximately 326 lives yearly from tuberculosis alone.

"Realization of the need for intensified work on the reservations had been constantly growing. In 1925 Dr. Cogswell sent Mrs. Henrietta B. Crockett to the Fort Belknap Reservation to try the experiment of establishing an Infant Care Clinic among the Indians, rousing their interest in more sanitary home conditions and particularly in reducing the infant death rate from tuberculosis. One-fourth of the babies dying on the reservation were the victims of this disease." (2)

The Montana Tuberculosis Association has worked in close cooperation with the Board through the years in the continuing efforts to eliminate tuberculosis as a threat to public health in Montana. On April 25, 1946 the association presented the State Board of Health with the first mobile photofluographic unit and a more intensive case-finding program for Montana has resulted. The State Board of Health and the Tuberculosis Association now operate two mobile and one portable chest X-ray units in the cooperative case-finding program that now covers the entire state.

Improved sanitation has been a major program since the Board was created. Sanitation has been closely linked with the eradication of typhoid fever. The fight against typhoid has been carried out through improvement of public water supplies, with general emphasis on chlorination of water and fly-control programs.

School sanitation has been greatly improved since 1917 when the Board was given the responsibility of reviewing all school building plans before construction was approved.

Montana's food and drug law was not passed until 1911. Up until 1920 all of the Board's food and drug laboratory work was done at Montana State College in Bozeman; at that time the food and drug laboratory work

² Ibid



LITTLE THREAT TO LIFE IN 1903—This automobile, pictured on a road near Boulder, was one of the few "horseless carriages" on Montana roads in 1903. Automobile traffic in those days was not the threat to human life it is today. In 1910, only 5 people were killed in automobile accidents; in 1951 auto accidents killed 180 people in the state, according to information recorded by the State Board of Health's vital statistics section.

was moved to Helena. Following the creation of the division of Water & Sewage in 1911, the Board moved the water and sewage laboratory from Montana State College in Bozeman to Helena in 1923.

Staff members in the Board's division of Sanitary Engineering worked with U. S. Public Health Service representatives from 1940 to 1943 on basic studies of the transmittal of Tularemia ("Rabbit Fever") through water. These studies determined that the chlorination of water eliminates the infectious organism, Pasteurella Tularensis.

In April of 1913 the Board's bulletin announced the adoption of the regulation prohibiting the use of a common or public drinking cup and a common roller towel in hotels, restaurants, lodging houses or other public places.

Since 1941 the licensing of maternity hospitals in the state has been a part of the Board's Maternal & Child Health program. Montana's Hospital Construction Licensing laws were passed in 1947 and since then 12 hospitals have been constructed under the program. The hospitals, constructed at a cost of approximately \$3 million, range in size from 10 to 36

beds. The construction program was made possible by the allocation of federal funds through the State Board of Health. Federal contributions to the hospital construction projects ranged from 33.33% to 42.41% of the total cost of the projects.

The regulating and licensing of hospitals and homes for the aged have materially improved the standards and quality of service rendered Montanans in these institutions.

Before legislation was approved in 1907 providing for the registration of births and deaths, less than half of the births and deaths in the state were recorded. By 1922 more than 90% of the births in the state were being recorder; in 1950 birth registrations in Montana were 99.6% complete.

In 1943 Montana's vital statistics legislation was amended to provide for the central registration of still births, legitimatations, adoptions, marriages, divorces and annulments of marriages as well as births and deaths. By 1951 there were more than 800,000 such records on file in the Board's Bureau of Vital Statistics.



LAST CHANCE GULCH AWASH—Helena's famous Last Chance Gulch (Main street) at the turn of the century looked like this following every heavy rain. Like other Montana towns in the year the legislature created the State Board of Health, 1901, Helena was without storm sewers. When it rained in those days the streets served as open sewers—not a desirable sanitary condition, to say the least. Today Helena, like most Montana towns of size, has eliminated this health hazard with underground storm sewers.



CLINICS FOR INDIAN MOTHERS—Dr. W. F. Cogswell, executive officer of the State Board of Health, 1912-1946, first sent state public health nurses to Indian reservations in 1924 "... to acquaint Indian mothers with methods of preventing tuberculosis." Pictured above are Indian mothers with their children at a clinic conducted on the Fort Belknap reservation in 1927 by Montana's first public health nurse, Mrs. Henrietta B. Crockett.

Infant and maternal health have been of interest to the Board since its creation. What is now known, as the Board's division of Child Health was created by state legislation in 1917; this legislation also provided for public health nursing and public health education. In 1919 the maternal death rate was 18 per 10,000 live births; at that time the state's maternal death rate was the highest in the nation. Through an intensive program carried on by public health workers, Montana physicians and nurses, the maternal death rate was reduced to 9 per 10,000 live birth in 1947 and 6 per 10,000 live births in 1951.

Montana's infant death rate has been reduced from 116.6 per 1,000 live births in 1910 to 26.8 deaths per 1,000 live births in 1950.

A center for the care and training of cerebral palsied children was developed in 1945. This project, a cooperative effort involving the State Board of Health and the Montana Chapter of Crippled Children and Adults, is located at Eastern Montana College of Education in Billings.

A bacteriologist was employed by the Board in November of 1901; he was the first professional public health worker, other than the Board's executive secretary, to be employed by the state. His first laboratory report

for Nov. 15, 1901 to May 1, 1902 shows that only 18 examinations were conducted in the laboratory in the period. Most of these examinations were for diphtheria. Dr. McCray was the first full-time laboratory director; he filled the position from October 1917 until his death June 14, 1919.

As physicians, public health workers and other public officials came to depend more and more on the laboratory, the volume of laboratory work showed a sharp increase.

Examinations made by the laboratory in the 1950-1952 biennial period totaled 252,998 on 119,571 specimens.

When the 1917 legislature passed legislation creating the Division of Child Welfare, the solons also approved legislation: giving school boards the authority to employ school nurses, county commissioners the authority to employ county nurses; and placed all public health nurses under the direction of the State Board of Health.

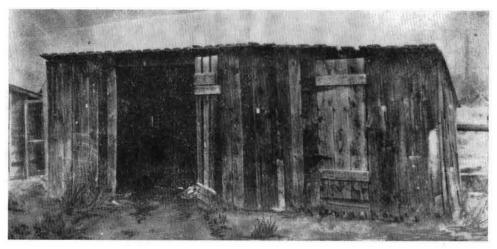
By 1919 Montana had 35 public health nurses reporting to the Board In 1931 there were 58 public health nurses in the state and only 14 counties were without some kind of public health nursing service. Montana has 62 public health nurses (exclusive of U. S. Indian Service and Metropolitan Life Insurance Co. Nurses) serving 62% of the population in 1939; in 1951 there were 58 public health nurses serving the entire state.

Health education has been an important part of the Board's public health program ever since 1901. The Board's first monthly bulletin was published in August of 1904 and was discontinued in October of 1920. On July 1, 1951 the State Board of Health resumed the monthly publication of an official bulletin, this time under the title of **Treasure State Health**.

The Board employed the first professional health educator in the Maternal & Child Health Division in 1935. The division of Health Education was not created until 1947.

In 1904 the Board started developing the present public health library. Early reports and bulletins issued by the Board of Health contained summaries of new legislation, rules and regulations relative to food handling, water supplies, sewage disposal, stream pollution, communicable disease and laboratory reports. Educational articles in these bulletins and reports covered such topics as the elimination of the housefly, typhoid fever, smallpox, tuberculosis, Rocky Mountain spotted fever and child health and school health services. Essays by school children were frequently published in the Board's reports and bulletins.

The 1917 Child Welfare Division law states that one of the responsibilities of the division was to "carry on a campaign of public health education...." But it was not until 1920 that a worker was employed with the sole responsibility of health education. "Because of special training for this work," the 1920 report of this division states, "the educational secretary has charge of promoting educational health work for children."



4

A

FIRST LABORATORY—In response to an appeal from the people of the Bitter Root valley, the State Board of Health, in 1901, started a study of Rocky Mountain Spotted Fever in Montana. The legislature, in 1913 created the State Board of Entomology to help in the coordination of the battle against the dread fever. The board was composed of the state entomologist as chairman, the Executive Officer of the State Board of Health as secretary and the state veterinarian. The Board of Entomology conducted early spotted fever experiments in this woodshed lab at Victory in 1919 and 1920. The Board of Entomology and the Board of Health studies, conducted in cooperation with the U.S. Public Health Service, were continued in an abandoned school house west of Hamilton from 1921 to 1926. In the period from 1912 to 1928, five public health workers died of spotted fever contracted in these early investigations.

As early as 1901 the Board's executive officer recommended meetings for local health officers in order that they could be better informed as to their responsibilities. In 1908 a Health Officers' Association was organized and invitations were extended to all health officers, members of boards of health and other interested citizens to attend the Association's meetings. These meetings proved the beginning of the Montana Public Health Association, organized in 1929. Again in 1952 the Boards executive officer, recognizing the need for developing plans and programs with the council of local health officers, reinstated these annual meetings.

Of major importance in planning the future, the Board believes, is the continued recruitment and retention of qualified public health staff. Action taken in May and June, 1950, by both the State Board of Health and The State Board of Examiners in adopting a new salary scale for employees was significant. Continued support of these actions by both the legislature and Montana citizens is vital.

Much of the success in public health work in Montana can be credited to the assistance of advisory committees such as those from the Montana Medical Association and the Montana State Dental Association; citizens

interested in Industrial Hygiene and the hospital programs; Women's Clubs; the Montana Health Planning Council; the Montana Public Health Association; the Montana Section of American Water Works Association; and the Montana Sewage and Industrial Waste Association. In the 25 biennial reports published since 1901 by the State Board of Health more than 25 associations, departments and agencies have received special mention for contributions to public health in Montana.

A review of the 50 years of public health work in Montana reveals that most of the present programs were begun many years ago. It is merely in the improvement of these programs that public health has advanced from 1901 to 1951.

STATE BOARD OF HEALTH MILESTONES, 1901-1951

- 1901 State Board of Health created by Seventh legislature*; County and city boards of health required*; Research begun on Focky Mountain Spotted Fever.
- 1901 Make special investigations of public hospitals, asylums and, other institutions when requested by governor.*
- 1901 Secretary shall keep reports received from local and county boards of health. Inspect local and county health officers' records at least once each year.*
- 1904 First Bulletin published.
- 1907 First Board reogranization*; Bureau of Vital Statistics established*;
 Inspection of schools and other public builidings required*; Communicable disease reporting ordered*; Tuberculosis control started; Water supply and sewage system approval required.*
- 1909 Furnishing information on diseases to schools required.*
- 1911 Pure Food and Drug Law enacted.*
- 1911 State Board of Health approves plans for building state sanitarium.*
- 1911 Revision Water and Sewage Law.*
- 1913 Board of Entomology formed to further spotted fever research.*
- 1914 First full-time health department organized, Billings and Yellowstone Couny.

- 1915 Mattress Act.*
- 1917 Child Health work started, including public health nursing and public health education*; Hygienic laboratory established.
- 1918 Venereal disease control work initiated.
- 1919 Second Board reorganization*; Epidemiologist established to study causes and prevalence of diseases and to take necessary action*; Hotel inspection authorized.*
- 1919 Dairy Commissioner to cooperate with State, County and local Health Officers in their efforts to produce clean milk. State, local and county health departments to make dairy inspections when they have reason to believe or suspect impure milk may cause disease.*
- 1919 Causative Agent for Rocky Mountain Spotted Fever found.
- 1922 Protective vaccine for Rocky Mountain Spotted Fever evolved.
- 1927 Montana builds \$60,000 laboratory at Hamilton.*
- 1929 Licensure of tourist camps started.*
- 1931 Registration of well drillers required.
- 1939 Industrial hygiene work authorized.*
- 1940 First dental director appointed.

- 1941 Crippled Children's Services transferred from State Department of Public Welfare*; Licensing of maternity hospitals required.*
- 1943 Third Board reorganization*; Health officers directed to safeguard public health and restrict or suppress prostitution*; Merit system adopted.*
- 1943 Creation of Dental Division.
- 1945 Full-time county and district health departments authorized*; Premarital examination law enacted.*
- 1945 Tuberculosis Division created.*
- 1945 Inspection of Homes for Aged or Board Homes by State Board of Health.*
- 1945 Child Welfare Division name changed to Maternal and Child Health Division.*
- 1945 State Board of Health authorized and directed to secure and process blood.*

- 1946 Creation of Division of Public Health Nursing.
- 1947 Hospital survey and construction authorized*; Licensing of hospitals and of boarding and nursing homes for the aged started*; Prenatal examination law enacted*; Inspection of refrigerated lockers required.*
- 1947 Creation of Division of Health Education.
- 1949 Fourth Board reorganization.*
- 1949 State Board of Health named as water pollution agency.*
- 1949 Narcotics Education Section moved from State Narcotic Commission to State Board of Health.*
- 1949 Cooperation with State Disaster Council.*
- 1951 Staff reorganized, including employment of first full-time director of Local Health Services.
- 1951 Licensure of Cesspool and Septic Tank Cleaners by State Board of Health.*

ė

^{*}Legislative action.

Montana

Vital Statistics 1950-1951

TABLE I

Montana's Population by Counties and Cities Over 1,000 for 1950.

Final, official U.S. Bureau of Census tabulations.

| County—City 1950 1940 BEAVERHEAD 6,671 6,943 Dillon 3,268 3,014 BIG HORN 9,824 10,419 Hardin 2,306 1,886 BLAINE 8,516 9,566 Chinook 2,307 2,051 Harlem 1,107 1,166 BROADWATER 2,922 3,451 Townsend 1,316 1,309 CARBON 10,241 11,865 Red Lodge 2,730 2,950 CARTER 2,798 3,280 CASCADE 53,027 41,999 Great Falls 39,214 29,928 CHOUTEAU 6,974 7,316 Fort Benton 1,522 1,227 CUSTER 12,661 10,422 Miles City 9,243 7,313 DANIELS 3,946 4,563 Scobey 1,628 1,311 DAWSON 9,092 8,618 Giendive | | Po | pulation |
|---|---------------|--------|---------------------------------------|
| Dillon 3,268 3,014 BIG HORN 9,824 10,419 Hardin 2,306 1,886 BLAINE 8,516 9,566 Chinook 2,307 2,051 Harlem 1,107 1,166 BROADWATER 2,922 3,451 Townsend 1,316 1,309 CARBON 10,241 11,865 Red Lodge 2,730 2,950 CARTER 2,798 3,280 CASCADE 30,214 29,228 CASCADE Great Falls 39,214 29,292 CHOUTEAU 6,974 7,316 Fort Benton 1,522 1,227 CUSTER 12,661 10,422 Miles City 9,243 7,313 DANIELS 3,946 4,563 Scobey 1,628 1,311 DAWSON 9,092 8,618 Glendive 5,254 4,524 DEER LODGE 16,553 13,627 Anaconoda< | County—City | | |
| BIG HORN 9,824 10,419 Hardin 2,306 1,886 BLAINE 8,516 9,566 Chinook 2,307 2,051 Harlem 1,107 1,166 BROADWATER 2,922 3,451 Townsend 1,316 1,309 CARBON 10,241 11,865 Red Lodge 2,730 2,950 CARTER 2,798 3,280 CASCADE 53,027 41,999 Great Falls 39,214 29,928 CHOUTEAU 6,974 7,316 Fort Benton 1,522 1,227 CUSTER 12,661 10,422 Miles City 9,243 7,313 DAWSON 9,092 8,618 Glendive 5,254 4,563 Scobey 1,628 1,311 DAWSON 9,092 8,618 Glendive 5,254 4,524 DEER LODGE 16,553 13,627 Anaconda | BEAVERHEAD | 6,671 | 6,943 |
| Hardin 2,306 1,886 BLAINE 8,516 9,566 Chinook 2,307 2,051 Harlem 1,107 1,166 BROADWATER 2,922 3,451 Townsend 1,316 1,309 CARBON 10,241 11,865 Red Lodge 2,730 2,950 CARTER 2,798 3,280 CASCADE 53,027 41,999 Great Falls 39,214 29,228 CHOUTEAU 6,974 7,316 Fort Benton 1,522 1,227 CUSTER 12,661 10,422 Miles City 9,243 7,313 DANIELS 3,946 4,563 Scobey 1,628 1,311 DAWSON 9,092 8,618 Glendive 5,254 4,524 DEER LODGE 16,553 13,627 Anaconda 11,254 11,004 FALLON 3,660 3,719 Baker | | 3,268 | 3,014 |
| BLAINE 8,516 9,566 Chinook 2,307 2,051 Harlem 1,107 1,166 BROADWATER 2,922 3,451 Townsend 1,316 1,309 CARBON 10,241 11,865 Red Lodge 2,730 2,950 CARTER 2,798 3,280 CASCADE 30,27 41,999 Great Falls 39,214 29,928 CHOUTEAU 6,974 7,316 Fort Benton 1,522 1,227 CUSTER 12,661 10,422 Miles City 9,243 7,313 DANIELS 3,946 4,563 Scobey 1,628 1,311 DAWSON 9,092 8,618 Glendive 5,254 4,524 DEER LODGE 16,553 13,627 Anaconda 11,254 11,004 FALLON 3,660 3,719 Baker 1,772 1,304 FERGUS | BIG HORN | 9,824 | 10,419 |
| Chinook 2,307 2,051 Harlem 1,107 1,166 BROADWATER 2,922 3,451 Townsend 1,316 1,309 CARBON 10,241 11,865 Red Lodge 2,730 2,950 CARTER 2,798 3,280 CASCADE 53,027 41,999 Great Falls 39,214 29,928 CHOUTEAU 6,974 7,316 Fort Benton 1,522 1,227 CUSTER 12,661 10,422 Miles City 9,243 7,313 DANIELS 3,946 4,563 Scobey 1,628 1,311 DAWSON 9,092 8,618 Glendive 5,254 4,524 DEER LODGE 16,553 13,627 Anaconda 11,254 11,004 FALLON 3,660 3,719 Baker 1,772 1,304 FERGUS 14,015 14,040 Lewistown | Hardin | 2,306 | 1,886 |
| Harlem | BLAINE | | |
| BROADWATER 2,922 3,451 Townsend 1,316 1,309 CARBON 10,241 11,865 Red Lodge 2,730 2,950 CARTER 2,798 3,280 CASCADE 53,027 41,999 Great Falls 39,214 29,928 CHOUTEAU 6,974 7,316 Fort Benton 1,522 1,227 CUSTER 12,661 10,422 Miles City 9,243 7,313 DANIELS 3,946 4,563 Scobey 1,628 1,311 DAWSON 9,092 8,618 Glendive 5,254 4,524 DEER LODGE 16,553 13,627 Anaconda 11,254 11,004 FALLON 3,660 3,719 Baker 1,772 1,304 FERGUS 14,015 14,040 Lewistown 6,573 5,874 FLATHEAD 31,495 24,271 Kalispell< | | . / 7 | |
| Townsend 1,316 1,309 CARBON 10,241 11,865 Red Lodge 2,730 2,950 CARTER 2,798 3,280 CASCADE 53,027 41,999 Great Falls 39,214 29,928 CHOUTEAU 6,974 7,316 Fort Benton 1,522 1,227 CUSTER 12,661 10,422 Miles City 9,243 7,313 DANIELS 3,946 4,563 Scobey 1,628 1,311 DAWSON 9,092 8,618 Glendive 5,254 4,524 DEER LODGE 16,553 13,627 Anaconda 11,254 11,004 FALLON 3,660 3,719 Baker 1,772 1,304 FERGUS 14,015 14,040 Lewistown 6,573 5,874 FLATHEAD 31,495 24,271 Kalispell 9,737 8,245 Whitefish </td <td></td> <td></td> <td>,</td> | | | , |
| CARBON 10,241 11,865 Red Lodge 2,730 2,950 CARTER 2,798 3,280 CASCADE 53,027 41,999 Great Falls 39,214 29,228 CHOUTEAU 6,974 7,316 Fort Benton 1,522 1,227 CUSTER 12,661 10,422 Miles City 9,243 7,313 DANIELS 3,946 4,563 Scobey 1,628 1,311 DAWSON 9,092 8,618 Glendive 5,254 4,524 DEER LODGE 16,553 13,627 Anaconda 11,254 11,004 FALLON 3,660 3,719 Baker 1,772 1,304 FERGUS 14,015 14,040 Lewistown 6,573 5,874 FLATHEAD 31,495 24,271 Kalispell 9,737 8,245 Whitefish 3,268 2,602 GAJ LATIN< | | . / | |
| Red Lodge 2,730 2,950 CARTER 2,798 3,280 CASCADE 53,027 41,999 Great Falls 39,214 29,928 CHOUTEAU 6,974 7,316 Fort Benton 1,522 1,227 CUSTER 12,661 10,422 Miles City 9,243 7,313 DANIELS 3,946 4,563 Scobey 1,628 1,311 DAWSON 9,092 8,618 Glendive 5,254 4,524 DEER LODGE 16,553 13,627 Anaconda 11,254 11,004 FALLON 3,660 3,719 Baker 1,772 1,304 FERGUS 14,015 14,040 Lewistown 6,573 5,874 FLATHEAD 31,495 24,271 Kalispell 9,737 8,245 Whitefish 3,268 2,602 GAJ LATIN 21,902 18,269 Bozeman | | | , |
| CARTER 2,798 3,280 CASCADE 53,027 41,999 Great Falls 39,214 29,928 CHOUTEAU 6,974 7,316 Fort Benton 1,522 1,227 CUSTER 12,661 10,422 Miles City 9,243 7,313 DANIELS 3,946 4,563 Scobey 1,628 1,311 DAWSON 9,092 8,618 Glendive 5,254 4,524 DEER LODGE 16,553 13,627 Anaconda 11,254 11,004 FALLON 3,660 3,719 Baker 1,772 1,304 FERGUS 14,015 14,045 Lewistown 6,573 5,874 FLATHEAD 31,495 24,271 Kalispell 9,737 8,245 Whitefish 3,268 2,602 GAI LATIN 21,902 18,269 Bozeman 11,325 8,665 Three Fo | | | |
| CASCADE 53,027 41,999 Great Falls 39,214 29,928 CHOUTEAU 6,974 7,316 Fort Benton 1,522 1,227 CUSTER 12,661 10,422 Miles City 9,243 7,313 DANIELS 3,946 4,563 Scobey 1,628 1,311 DAWSON 9,092 8,618 Glendive 5,254 4,524 DEER LODGE 16,553 13,627 Anaconda 11,254 11,004 FALLON 3,660 3,719 Baker 1,772 1,304 FERGUS 14,015 14,040 Lewistown 6,573 5,874 FLATHEAD 31,495 24,271 Kalispell 9,737 8,245 Whitefish 3,268 2,602 GAJ LATIN 2,002 18,269 GEOLDEN VALLEY 1,114 876 GARFIELD 2,722 2,641 GLACIER 9,645 9,034 Cut Bank 3,721 <t< td=""><td></td><td></td><td></td></t<> | | | |
| Great Falls 39,214 29,928 CHOUTEAU 6,974 7,316 Fort Benton 1,522 1,227 CUSTER 12,661 10,422 Miles City 9,243 7,313 DANIELS 3,946 4,563 Scobey 1,628 1,311 DAWSON 9,092 8,618 Glendive 5,254 4,524 DEER LODGE 16,553 13,627 Anaconda 11,254 11,004 FALLON 3,660 3,719 Baker 1,772 1,304 FERGUS 14,015 14,040 Lewistown 6,573 5,874 FLATHEAD 31,495 24,271 Kalispell 9,737 8,245 Whitefish 3,268 2,602 GAI LATIN 21,902 18,269 Bozeman 11,325 8,665 Three Forks 1,114 876 GARFIELD 2,172 2,641 GLACIE | | , | , |
| CHOUTEAU 6,974 7,316 Fort Benton 1,522 1,227 CUSTER 12,661 10,422 Miles City 9,243 7,313 DANIELS 3,946 4,563 Scobey 1,628 1,311 DAWSON 9,092 8,618 Glendive 5,254 4,524 DEER LODGE 16,553 13,627 Anaconda 11,254 11,004 FALLON 3,660 3,719 Baker 1,772 1,304 FERGUS 14,015 14,040 Lewistown 6,573 5,874 FLATHEAD 31,495 24,271 Kalispell 9,737 8,245 Whitefish 3,268 2,602 GALATIN 21,902 18,269 Bozeman 11,325 8,665 Three Forks 1,114 876 GARFIELD 2,172 2,641 GLACIER 9,645 9,034 Cut Bank 3,721 2,509 Browning 1,691 1,825 <td></td> <td></td> <td>20,75.5.5</td> | | | 20,75.5.5 |
| Fort Benton 1,522 1,227 CUSTER 12,661 10,422 Miles City 9,243 7,313 DANIELS 3,946 4,563 Scobey 1,628 1,311 DAWSON 9,092 8,618 Glendive 5,254 4,524 DEER LODGE 16,553 13,627 Anaconda 11,254 11,004 FALLON 3,660 3,719 Baker 1,772 1,304 FERGUS 14,015 14,040 Lewistown 6,573 5,874 FLATHEAD 31,495 24,271 Kalispell 9,737 8,245 Whitefish 3,268 2,602 GAI LATIN 21,902 18,269 Bozeman 11,325 8,665 Three Forks 1,114 876 GARFIELD 2,172 2,641 GLACIER 9,645 9,034 Cut Bank 3,721 2,509 Browning <td></td> <td>.*</td> <td>,</td> | | .* | , |
| CUSTER 12,661 10,422 Miles City 9,243 7,313 DANIELS 3,946 4,563 Scobey 1,628 1,311 DAWSON 9,092 8,618 Glendive 5,254 4,524 DEER LODGE 16,553 13,627 Anaconda 11,254 11,004 FALLON 3,660 3,719 Baker 1,772 1,304 FERGUS 14,015 14,040 Lewistown 6,573 5,874 FLATHEAD 31,495 24,271 Kalispell 9,737 8,245 Whitefish 3,268 2,602 GAI LATIN 21,902 18,269 Bozeman 11,325 8,665 Three Forks 1,114 876 GARFIELD 2,172 2,641 GLACIER 9,645 9,034 Cut Bank 3,721 2,509 Browning 1,691 1,825 GOLDEN VALLEY </td <td></td> <td></td> <td></td> | | | |
| Miles City 9,243 7,313 DANIELS 3,946 4,563 Scobey 1,628 1,311 DAWSON 9,092 8,618 Glendive 5,254 4,524 DEER LODGE 16,553 13,627 Anaconda 11,254 11,004 FALLON 3,660 3,719 Baker 1,772 1,304 FERGUS 14,015 14,040 Lewistown 6,573 5,874 FLATHEAD 31,495 24,271 Kalispell 9,737 8,245 Whitefish 3,268 2,602 GAI LATIN 21,902 18,269 Bozeman 11,325 8,665 Three Forks 1,114 876 GARFIELD 2,172 2,641 GLACIER 9,645 9,034 Cut Bank 3,721 2,509 Browning 1,691 1,825 GOLDEN VALLEY 1,337 1,607 GRANITE <td></td> <td>,</td> <td>,</td> | | , | , |
| DANIELS 3,946 4,563 Scobey 1,628 1,311 DAWSON 9,092 8,618 Glendive 5,254 4,524 DEER LODGE 16,553 13,627 Anaconda 11,254 11,004 FALLON 3,660 3,719 Baker 1,772 1,304 FERGUS 14,015 14,040 Lewistown 6,573 5,874 FLATHEAD 31,495 24,271 Kalispell 9,737 8,245 Whitefish 3,268 2,602 GAJ LATIN 21,902 18,269 Bozeman 11,325 8,665 Three Forks 1,114 876 GARFIELD 2,172 2,641 GLACIER 9,645 9,034 Cut Bank 3,721 2,509 Browning 1,691 1,825 GOLDEN VALLEY 1,337 1,607 GRANITE 2,773 3,401 HILL 14,285 13,304 Havre 8,086 6,427 | | | |
| Scobey 1,628 1,311 DAWSON 9,092 8,618 Glendive 5,254 4,524 DEER LODGE 16,553 13,627 Anaconda 11,254 11,004 FALLON 3,660 3,719 Baker 1,772 1,304 FERGUS 14,015 14,040 Lewistown 6,573 5,874 FLATHEAD 31,495 24,271 Kalispell 9,737 8,245 Whitefish 3,268 2,602 GAJ LATIN 21,902 18,269 Bozeman 11,325 8,665 Three Forks 1,114 876 GAFFIELD 2,172 2,641 GLACIER 9,645 9,034 Cut Bank 3,721 2,509 Browning 1,691 1,825 GOLDEN VALLEY 1,337 1,607 GRANITE 2,773 3,401 HILL 14,285 13,304 Havre | • | , | , |
| DAWSON 9,092 8,618 Glendive 5,254 4,524 DEER LODGE 16,553 13,627 Anaconda 11,254 11,004 FALLON 3,660 3,719 Baker 1,772 1,304 FERGUS 14,015 14,040 Lewistown 6,573 5,874 FLATHEAD 31,495 24,271 Kalispell 9,737 8,245 Whitefish 3,268 2,602 GAI LATIN 21,902 18,269 Bozeman 11,325 8,665 Three Forks 1,114 876 GARFIELD 2,172 2,641 GLACIER 9,645 9,034 Cut Bank 3,721 2,509 Browning 1,691 1,825 GOLDEN VALLEY 1,337 1,607 GRANITE 2,773 3,401 HILL 14,285 13,304 Havre 8,086 6,427 JEFFERSON | | . / | |
| Glendive 5,254 4,524 DEER LODGE 16,553 13,627 Anaconda 11,254 11,004 FALLON 3,660 3,719 Baker 1,772 1,304 FERGUS 14,015 14,040 Lewistown 6,573 5,874 FLATHEAD 31,495 24,271 Kalispell 9,737 8,245 Whitefish 3,268 2,602 GAI LATIN 21,902 18,269 Bozeman 11,325 8,665 Three Forks 1,114 876 GARFIELD 2,172 2,641 GLACIER 9,645 9,034 Cut Bank 3,721 2,509 Browning 1,691 1,825 GOLDEN VALLEY 1,337 1,607 GRANITE 2,773 3,401 HILL 14,285 13,304 Havre 8,086 6,427 JEFFERSON 4,041 4,664 Boulder | | , | , |
| DEER LODGE 16,553 13,627 Anaconda 11,254 11,004 FALLON 3,660 3,719 Baker 1,772 1,304 FERGUS 14,015 14,040 Lewistown 6,573 5,874 FLATHEAD 31,495 24,271 Kalispell 9,737 8,245 Whitefish 3,268 2,602 GAI LATIN 21,902 18,269 Bozeman 11,325 8,665 Three Forks 1,114 876 GARFIELD 2,172 2,641 GLACIER 9,645 9,034 Cut Bank 3,721 2,509 Browning 1,691 1,825 GOLDEN VALLEY 1,337 1,607 GRANITE 2,773 3,401 HILL 14,285 13,304 Havre 8,086 6,427 JEFFERSON 4,041 4,664 Boulder 1,017 510 JUDITH BASIN 3,200 3,655 LAKE 13,835 13,490 </td <td></td> <td></td> <td></td> | | | |
| Anaconda 11,254 11,004 FALLON 3,660 3,719 Baker 1,772 1,304 FERGUS 14,015 14,040 Lewistown 6,573 5,874 FLATHEAD 31,495 24,271 Kalispell 9,737 8,245 Whitefish 3,268 2,602 GAI LATIN 21,902 18,269 Bozeman 11,325 8,665 Three Forks 1,114 876 GARFIELD 2,172 2,641 GLACIER 9,645 9,034 Cut Bank 3,721 2,509 Browning 1,691 1,825 GOLDEN VALLEY 1,337 1,607 GRANITE 2,773 3,401 HILL 14,285 13,304 Havre 8,086 6,427 JEFFERSON 4,041 4,664 Boulder 1,017 510 JUDITH BASIN 3,200 3,655 LAKE 13,835 13,490 Polson 2,280 2,156 | | , | , , , , , , , , , , , , , , , , , , , |
| FALLON 3,660 3,719 Baker 1,772 1,304 FERGUS 14,015 14,040 Lewistown 6,573 5,874 FLATHEAD 31,495 24,271 Kalispell 9,737 8,245 Whitefish 3,268 2,602 GAI LATIN 21,902 18,269 Bozeman 11,325 8,665 Three Forks 1,114 876 GARFIELD 2,172 2,641 GLACIER 9,645 9,034 Cut Bank 3,721 2,509 Browning 1,691 1,825 GOLDEN VALLEY 1,337 1,607 GRANITE 2,773 3,401 HILL 14,285 13,304 Havre 8,086 6,427 JEFFERSON 4,041 4,664 Boulder 1,017 510 JUDITH BASIN 3,200 3,655 LAKE 13,835 13,490 Polson 2,280 2,156 | | | |
| Baker 1,772 1,304 FERGUS 14,015 14,040 Lewistown 6,573 5,874 FLATHEAD 31,495 24,271 Kalispell 9,737 8,245 Whitefish 3,268 2,602 GAJ LATIN 21,902 18,269 Bozeman 11,325 8,665 Three Forks 1,114 876 GARFIELD 2,172 2,641 GLACIER 9,645 9,034 Cut Bank 3,721 2,509 Browning 1,691 1,825 GOLDEN VALLEY 1,337 1,607 GRANITE 2,773 3,401 HILL 14,285 13,304 Havre 8,086 6,427 JEFFERSON 4,041 4,664 Boulder 1,017 510 JUDITH BASIN 3,200 3,655 LAKE 13,835 13,490 Polson 2,280 2,156 | | , | , |
| FERGUS 14,015 14,040 Lewistown 6,573 5,874 FLATHEAD 31,495 24,271 Kalispell 9,737 8,245 Whitefish 3,268 2,602 GAJ LATIN 21,902 18,269 Bozeman 11,325 8,665 Three Forks 1,114 876 GARFIELD 2,172 2,641 GLACIER 9,645 9,034 Cut Bank 3,721 2,509 Browning 1,691 1,825 GOLDEN VALLEY 1,337 1,607 GRANITE 2,773 3,401 HILL 14,285 13,304 Havre 8,086 6,427 JEFFERSON 4,041 4,664 Boulder 1,017 510 JUDITH BASIN 3,200 3,655 LAKE 13,835 13,490 Polson 2,280 2,156 | | | |
| Lewistown 6,573 5,874 FLATHEAD 31,495 24,271 Kalispell 9,737 8,245 Whitefish 3,268 2,602 GAI LATIN 21,902 18,269 Bozeman 11,325 8,665 Three Forks 1,114 876 GARFIELD 2,172 2,641 GLACIER 9,645 9,034 Cut Bank 3,721 2,509 Browning 1,691 1,825 GOLDEN VALLEY 1,337 1,607 GRANITE 2,773 3,401 HILL 14,285 13,304 Havre 8,086 6,427 JEFFERSON 4,041 4,664 Boulder 1,017 510 JUDITH BASIN 3,200 3,655 LAKE 13,835 13,490 Polson 2,280 2,156 | | | |
| FLATHEAD 31,495 24,271 Kalispell 9,737 8,245 Whitefish 3,268 2,602 GAJ LATIN 21,902 18,269 Bozeman 11,325 8,665 Three Forks 1,114 876 GARFIELD 2,172 2,641 GLACIER 9,645 9,034 Cut Bank 3,721 2,509 Browning 1,691 1,825 GOLDEN VALLEY 1,337 1,607 GRANITE 2,773 3,401 HILL 14,285 13,304 Havre 8,086 6,427 JEFFERSON 4,041 4,664 Boulder 1,017 510 JUDITH BASIN 3,200 3,655 LAKE 13,835 13,490 Polson 2,280 2,156 | | | |
| Kalispell 9,737 8,245 Whitefish 3,268 2,602 GAI LATIN 21,902 18,269 Bozeman 11,325 8,665 Three Forks 1,114 876 GARFIELD 2,172 2,641 GLACIER 9,645 9,034 Cut Bank 3,721 2,509 Browning 1,691 1,825 GOLDEN VALLEY 1,337 1,607 GRANITE 2,773 3,401 HILL 14,285 13,304 Havre 8,086 6,427 JEFFERSON 4,041 4,664 Boulder 1,017 510 JUDITH BASIN 3,200 3,655 LAKE 13,835 13,490 Polson 2,280 2,156 | | | , |
| Whitefish 3,268 2,602 GAI LATIN 21,902 18,269 Bozeman 11,325 8,665 Three Forks 1,114 876 GARFIELD 2,172 2,641 GLACIER 9,645 9,034 Cut Bank 3,721 2,509 Browning 1,691 1,825 GOLDEN VALLEY 1,337 1,607 GRANITE 2,773 3,401 HILL 14,285 13,304 Havre 8,086 6,427 JEFFERSON 4,041 4,664 Boulder 1,017 510 JUDITH BASIN 3,200 3,655 LAKE 13,835 13,490 Polson 2,280 2,156 | | | |
| GAI LATIN 21,902 18,269 Bozeman 11,325 8,665 Three Forks 1,114 876 GARFIELD 2,172 2,641 GLACIER 9,645 9,034 Cut Bank 3,721 2,509 Browning 1,691 1,825 GOLDEN VALLEY 1,337 1,607 GRANITE 2,773 3,401 HILL 14,285 13,304 Havre 8,086 6,427 JEFFERSON 4,041 4,664 Boulder 1,017 510 JUDITH BASIN 3,200 3,655 LAKE 13,835 13,490 Polson 2,280 2,156 | | | |
| Bozeman 11,325 8,665 Three Forks 1,114 876 GARFIELD 2,172 2,641 GLACIER 9,645 9,034 Cut Bank 3,721 2,509 Browning 1,691 1,825 GOLDEN VALLEY 1,337 1,607 GRANITE 2,773 3,401 HILL 14,285 13,304 Havre 8,086 6,427 JEFFERSON 4,041 4,664 Boulder 1,017 510 JUDITH BASIN 3,200 3,655 LAKE 13,835 13,490 Polson 2,280 2,156 | | , | , . |
| Three Forks 1,114 876 GARFIELD 2,172 2,641 GLACIER 9,645 9,034 Cut Bank 3,721 2,509 Browning 1,691 1,825 GOLDEN VALLEY 1,337 1,607 GRANITE 2,773 3,401 HILL 14,285 13,304 Havre 8,086 6,427 JEFFERSON 4,041 4,664 Boulder 1,017 510 JUDITH BASIN 3,200 3,655 LAKE 13,835 13,490 Polson 2,280 2,156 | Bozeman | | |
| GLACIER 9,645 9,034 Cut Bank 3,721 2,509 Browning 1,691 1,825 GOLDEN VALLEY 1,337 1,607 GRANITE 2,773 3,401 HILL 14,285 13,304 Havre 8,086 6,427 JEFFERSON 4,041 4,664 Boulder 1,017 510 JUDITH BASIN 3,200 3,655 LAKE 13,835 13,490 Polson 2,280 2,156 | Three Forks | 1,114 | |
| Cut Bank 3,721 2,509 Browning 1,691 1,825 GOLDEN VALLEY 1,337 1,607 GRANITE 2,773 3,401 HILL 14,285 13,304 Havre 8,086 6,427 JEFFERSON 4,041 4,664 Boulder 1,017 510 JUDITH BASIN 3,200 3,655 LAKE 13,835 13,490 Polson 2,280 2,156 | | 2,172 | 2,641 |
| Cut Bank Browning 3,721 2,509 Browning 1,691 1,825 GOLDEN VALLEY 1,337 1,607 GRANITE 2,773 3,401 HILL 14,285 13,304 Havre 8,086 6,427 JEFFERSON 4,041 4,664 Boulder 1,017 510 JUDITH BASIN 3,200 3,655 LAKE 13,835 13,490 Polson 2,280 2,156 | GLACIER | 9,645 | 9,034 |
| GOLDEN VALLEY 1,337 1,607 GRANITE 2,773 3,401 HILL 14,285 13,304 Havre 8,086 6,427 JEFFERSON 4,041 4,664 Boulder 1,017 510 JUDITH BASIN 3,200 3,655 LAKE 13,835 13,490 Polson 2,280 2,156 | | 3,721 | |
| GRANITE 2,773 3,401 HILL 14,285 13,304 Havre 8,086 6,427 JEFFERSON 4,041 4,664 Boulder 1,017 510 JUDITH BASIN 3,200 3,655 LAKE 13,835 13,490 Polson 2,280 2,156 | Browning | 1,691 | 1,825 |
| HILL 14,285 13,304 Havre 8,086 6,427 JEFFERSON 4,041 4,664 Boulder 1,017 510 JUDITH BASIN 3,200 3,655 LAKE 13,835 13,490 Polson 2,280 2,156 | GOLDEN VALLEY | 1,337 | 1,607 |
| Havre 8,086 6,427 JEFFERSON 4,041 4,664 Boulder 1,017 510 JUDITH BASIN 3,200 3,655 LAKE 13,835 13,490 Polson 2,280 2,156 | GRANITE | 2,773 | 3,401 |
| Havre 8,086 6,427 JEFFERSON 4,041 4,664 Boulder 1,017 510 JUDITH BASIN 3,200 3,655 LAKE 13,835 13,490 Polson 2,280 2,156 | HILL | 14,285 | 13,304 |
| JEFFERSON 4,041 4,664 Boulder 1,017 510 JUDITH BASIN 3,200 3,655 LAKE 13,835 13,490 Polson 2,280 2,156 | Havre | | |
| Boulder 1,017 510 JUDITH BASIN 3,200 3,655 LAKE 13,835 13,490 Polson 2,280 2,156 | | 4,041 | 4,664 |
| JUDITH BASIN 3,200 3,655 LAKE 13,835 13,490 Polson 2,280 2,156 | | 1,017 | 510 |
| LAKE 13,835 13,490 Polson 2,280 2,156 | | 3,200 | 3,655 |
| Polson 2,280 2,156 | | 13,835 | 13,490 |
| | | | |
| 1,00 | Ronan | 1,251 | 1,032 |
| LEWIS & CLARK | LEWIS & CLARK | | 22,131 |
| Helena | Helena | | |
| East Helena 1,216 1,143 | East Helena | , | , |
| LIBERTY | LIBERTY | 2,180 | 2,209 |

| TABLE I (Continued) | | | | |
|---|------------------|------------|------------------|---|
| County City | 1050 | Population | 1010 | |
| County—City | 1950 | | 1940 | |
| LINCOLN | 8,693 | | 7,882 | |
| Libby | 2,401 | | 1,837 | |
| McCONE | 3,258 | | 3,798 | |
| MADISON | 5,998 | | 7,294 | |
| MEAGHER | 2,079 | | 2,237 | |
| White Sulphur Springs | 1,025 | | 858 | |
| MINERAL | 2,081 | | 2,135 | |
| MISSOULA | 35,493 | | 29,038 | |
| MUSSELSHELL | 22,485 | | 18,449 | |
| Roundup | 5,408 2,856 | | 5,717 2,644 | |
| PARK | 11,999 | | 11,566 | |
| Livingston | 7,683 | | 6,642 | |
| PETROLEUM | 1,026 | | 1,083 | |
| PHILLIPS | 6,334 | | 7,892 | |
| Malta | 2,095 | | 2,215 | |
| PONDERA | 6,392 | | 6,716 | |
| Conrad | 1,865 | | 1,471 | , |
| POWDER RIVER | 2,693 | | 3,159 | |
| POWELL | 6,301 | | 6,152 | |
| Deer Lodge | 3,779 | | 3,278 | |
| PRAIRIE | 2,377 | | 2,410 | |
| Terry | 1,191 | | 1,012 | |
| RAVALLIHamilton | 13,101 2,678 | | 12,978 | |
| RICHLAND | 10,366 | | 2,332 | |
| Sidney | 3,987 | | 10,209 2,978 | |
| ROOSEVELT | 9,580 | | 9,806 | |
| Wolf Point | 2,557 | | 1,960 | |
| ROSEBUD | 6,570 | | 6,477 | |
| Forsyth | 1,906 | | 1,696 | |
| SANDERS | 6,983 | | 6,926 | |
| SHERIDAN | 6,674 | | 7,814 | |
| Plentywood | 1,862 | | 1,574 | |
| SILVER BOW | 48,422 33,251 | | 53,207 | |
| STILLWATER | 5,416 | | 37,081 5,694 | |
| Columbus | 1,097 | | 962 | |
| SWEET GRASS | 3,621 | | 3,719 | |
| Big Timber | 1,697 | | 1,533 | |
| TETON | 7,232 | | 6,922 | |
| Choteau | 1,618 | | 1,181 | |
| TOOLE | 6,867 | | 6,769 | |
| Shelby | 3,058 | | 2,538 | |
| TREASURE | 1,402 | | 1,499 | |
| VALLEY | 11,353 | | 15,181 | |
| Glasgow | 3,821 | | 3,799 | |
| WHEATLAND | 3,187 | | 3,286 | |
| Harlowton WIBAUX | 1,733 | | 1,547 | |
| Experience in the state of the | 1,907 | | 2,161 | |
| YELLOWSTONE Billings | 55,875 31,834 | | 41,182 23,261 | |
| Laurel | 3,663 | | 23,261 | |
| YELLOWSTONE PARK | 58 | | 43 | |
| | 30 | | 7.7 | |

TABLE II

Resident Births, Deaths, Infant Deaths, Stillbirths, Marriages, and Divorces

With Their Rates by Counties in 1950.

The Birth, Death, Marriage and Divorce Rates are per 1,000 of Population; The Infant and Stillbirth Rates per 1,000 Live Births.

| Births | Rate | Deaths | Rate | Infant Deaths | Rate | | | Marriages | Rate | Divorces | Rate |
|--------|---|---|--|---|---|--|---|--|---|--|---|
| 143 | 21.4 | . 71 | 10.6 | 5 | 35.0 | 3 | 21.0 | 68 | 10.2 | 22 | 3.3 |
| 330 | 33.6 | 94 | 9.6 | 20 | 60.6 | 6 | 18.2 | . 112 | 11.4 | 27 | 2.7 |
| 281 | 33.0 | 75 | 8.8 | 12 | 42.7 | 2 | 7.1 | - 58 | 6.8 | 5 | 0.6 |
| 72 | 24.6 | 28 | 9.6 | 2 | 27.8 | 1 | 13.9 | 39 | 13.3 | 33 | 11.3 |
| 220 | 21.5 | 106 | 10.4 | 3 | 13.6 | 7 | 31.8 | 128 | 12.5 | 19 | 1.9 |
| 68 | 24.3 | 27 | 9.6 | 1 | 14.7 | 2. | 29.4 | 6 | 2.1 | 5 | 1.8 |
| 1,499 | 28.3 | 486 | 9.2 | 35 | 23.3 | 28 | 18.7 | 694 | 13.1 | 187 | 3.5 |
| . 194 | 27.8 | 70 | 10.0 | 7 | 36.1 | 1 | 5.2 | 112 | 16.1 | 11 | 1.6 |
| 331 | 26.1 | 99 | 7.8 | 5 | 15.1 | 7 | 21.1 | 305 | 24.1 | 55 | 4.3 |
| 109 | 27.6 | 33 | 8.4 | 3 | 27.5 | 0 | .0 | 39 | 9.9 | 5 | 1.3 |
| | 30.8 | 68 | 7.5 | 7 | 25.0 | 3 | 10.7 | 92 | 10.1 | 20 | 2.2 |
| 362 | 21.9 | 175 | 10.6 | 8 | 22.1 | 4 | 11.0 | 126 | 7.6 | 39 | 2.4 |
| 87 | 23.8 | 36 | 9.8 | 4 | 46.0 | 1 | 11.5 | 37 | 10.1 | 4 | 1.1 |
| 380 | 27.1 | 160 | 11.4 | 12 | 31.6 | 3 | 7.9 | 139 | 9.9 | 33 | 2.4 |
| 795 | 23.2 | 295 | 9.4 | 25 | 31.4 | 18 | 22.6 | 311 | 9.9 | 81 | 2.6 |
| 595 | 27.2 | 167 | 7.6 | 8 | 13.4 | 6 | 10.1 | 190 | 8.7 | 65 | 3.0 |
| 66 | 30.4 | 24 | 11.0 | 3 | 45.5 | 1 | 15.2 | 6 | 2.7 | 0 | .0 |
| 295 | 30.6 | 104 | 10.8 | 13 | 44.1 | 5 | 16.9 | 60 | 6.2 | 33 | 3.4 |
| 29 | 21.7 | 15 | 11.2 | 1 | 34.5 | 0 | 0 | . 7 | 5.2 | 1 | 0.7 |
| 61 | 22.0 | 32 | 11.5 | 4 | 65.6 | 1 | 16.4 | 34 | 12.3 | . 1 | 0.4 |
| 419 | 29.3 | 130 | 9.1 | 11 | 26.3 | 10 | 23.9 | 185 | 13.0 | 46 | 3.2 |
| 61 | 15.2 | 43 | 10.7 | 2 | 32.8 | 0 | .0 | 67 | 16.7 | 2 | 0.5 |
| 84 | 26.3 | 37 | 11.6 | 1 | 11.9 | 0 | .0 | 19 | 5.9 | 15 | 4.7 |
| 353 | 25.5 | 147 | 10.6 | 12 | 34.0 | 3 | 8.5 | 122 | 8.8 | 42 | 3.0 |
| 674 | 27.5 | 267 | 10.9 | 18 | 26.7 | 18 | 26.7 | 385 | 15.7 | 192 | 7.8 |
| 57 | 26.1 | 19 | 8.7 | 0 | .0 | 2 | 35.1 | 21 | 9.6 | 4 | 1.8 |
| 242 | 27.8 | 74 | 8.5 | 5 | 20.7 | 1 | 4.1 | 76 | 8.7 | 17 | 2.0 |
| | 143 330 281 72 220 68 1,499 194 331 109 280 362 87 380 795 595 66 295 29 61 419 61 84 353 674 57 | 330 33.6 281 33.0 72 24.6 220 21.5 68 24.3 1,499 28.3 194 27.8 331 26.1 109 27.6 280 30.8 362 21.9 87 23.8 380 27.1 795 23.2 595 27.2 66 30.4 295 30.6 29 21.7 61 22.0 419 29.3 61 15.2 84 26.3 353 25.5 674 27.5 57 26.1 | 143 21.4 71 330 33.6 94 281 33.0 75 72 24.6 28 220 21.5 106 68 24.3 27 1,499 28.3 486 194 27.8 70 331 26.1 99 109 27.6 33 280 30.8 68 362 21.9 175 87 23.8 36 380 27.1 160 795 23.2 295 595 27.2 167 66 30.4 24 295 30.6 104 29 21.7 15 61 22.0 32 419 29.3 130 61 15.2 43 84 26.3 37 353 25.5 147 674 27.5 267 57 26.1 19 | 143 21.4 71 10.6 330 33.6 94 9.6 281 33.0 75 8.8 72 24.6 28 9.6 220 21.5 106 10.4 68 24.3 27 9.6 1,499 28.3 486 9.2 194 27.8 70 10.0 331 26.1 99 7.8 109 27.6 33 8.4 280 30.8 68 7.5 362 21.9 175 10.6 87 23.8 36 9.8 380 27.1 160 11.4 795 23.2 295 9.4 595 27.2 167 7.6 66 30.4 24 11.0 295 30.6 104 10.8 29 21.7 15 11.2 61 22.0 32 11.5 419 29.3 130 9.1 61 | 143 21.4 71 10.6 5 330 33.6 94 9.6 20 281 33.0 75 8.8 12 72 24.6 28 9.6 2 220 21.5 106 10.4 3 68 24.3 27 9.6 1 1,499 28.3 486 9.2 35 194 27.8 70 10.0 7 331 26.1 99 7.8 5 109 27.6 33 8.4 3 280 30.8 68 7.5 7 362 21.9 175 10.6 8 87 23.8 36 9.8 4 380 27.1 160 11.4 12 795 23.2 295 9.4 25 595 27.2 167 7.6 8 66 30.4 24 | 143 21.4 71 10.6 5 35.0 330 33.6 94 9.6 20 60.6 281 33.0 75 8.8 12 42.7 72 24.6 28 9.6 2 27.8 220 21.5 106 10.4 3 13.6 68 24.3 27 9.6 1 14.7 1,499 28.3 486 9.2 35 23.3 194 27.8 70 10.0 7 36.1 331 26.1 99 7.8 5 15.1 109 27.6 33 8.4 3 27.5 280 30.8 68 7.5 7 25.0 362 21.9 175 10.6 8 22.1 87 23.8 36 9.8 4 46.0 380 27.1 160 11.4 12 31.6 795 23.2 295 9.4 25 31.4 595 27.2 167 7.6 8 13.4 66 30.4 24 11.0 3 45.5 295 30.6 104 10.8 13 44.1 29 21.7 15 11.2 1 34.5 61 22.0 32 11.5 4 65.6 419 29.3 130 9.1 11 26.3 61 15.2 43 10.7 2 32.8 84 26.3 37 11.6 1 11.9 353 25.5 147 10.6 12 34.0 674 27.5 267 10.9 18 26.7 57 26.1 19 8.7 0 .0 | 143 21.4 71 10.6 5 35.0 3 330 33.6 94 9.6 20 60.6 6 281 33.0 75 8.8 12 42.7 2 72 24.6 28 9.6 2 27.8 1 220 21.5 106 10.4 3 13.6 7 68 24.3 27 9.6 1 14.7 2 1,499 28.3 486 9.2 35 23.3 28 194 27.8 70 10.0 7 36.1 1 331 26.1 99 7.8 5 15.1 7 109 27.6 33 8.4 3 27.5 0 280 30.8 68 7.5 7 25.0 3 362 21.9 175 10.6 8 22.1 4 87 23.8 36 | 143 21.4 71 10.6 5 35.0 3 21.0 330 33.6 94 9.6 20 60.6 6 18.2 281 33.0 75 8.8 12 42.7 2 7.1 72 24.6 28 9.6 2 27.8 1 13.9 220 21.5 106 10.4 3 13.6 7 31.8 68 24.3 27 9.6 1 14.7 2 29.4 1,499 28.3 486 9.2 35 23.3 28 18.7 194 27.8 70 10.0 7 36.1 1 5.2 331 26.1 99 7.8 5 15.1 7 21.1 109 27.6 33 8.4 3 27.5 0 .0 280 30.8 68 7.5 7 25.0 3 10.7 | 143 21.4 71 10.6 5 35.0 3 21.0 68 330 33.6 94 9.6 20 60.6 6 18.2 112 281 33.0 75 8.8 12 42.7 2 7.1 58 72 24.6 28 9.6 2 27.8 1 13.9 39 220 21.5 106 10.4 3 13.6 7 31.8 128 68 24.3 27 9.6 1 14.7 2 29.4 6 1,499 28.3 486 9.2 35 23.3 28 18.7 694 194 27.8 70 10.0 7 36.1 1 5.2 112 331 26.1 99 7.8 5 15.1 7 21.1 305 109 27.6 33 8.4 3 27.5 0 .0 .0< | 143 21.4 71 10.6 5 35.0 3 21.0 68 10.2 330 33.6 94 9.6 20 60.6 6 18.2 112 11.4 281 33.0 75 8.8 12 42.7 2 7.1 58 6.8 72 24.6 28 9.6 2 27.8 1 13.9 39 13.3 220 21.5 106 10.4 3 13.6 7 31.8 128 12.5 68 24.3 27 9.6 1 14.7 2 29.4 6 2.1 1,499 28.3 486 9.2 35 23.3 28 18.7 694 13.1 194 27.8 70 10.0 7 36.1 1 5.2 112 16.1 331 26.1 99 7.8 5 15.1 7 21.1 305 24.1 | 143 21.4 71 10.6 5 35.0 3 21.0 68 10.2 22 330 33.6 94 9.6 20 60.6 6 18.2 112 11.4 27 281 33.0 75 8.8 12 42.7 2 7.1 58 6.8 5 72 24.6 28 9.6 2 27.8 1 13.9 39 13.3 33 220 21.5 106 10.4 3 13.6 7 31.8 128 12.5 19 68 24.3 27 9.6 1 14.7 2 29.4 6 2.1 5 1,499 28.3 486 9.2 35 23.3 28 18.7 694 13.1 187 194 27.8 70 10.0 7 36.1 1 5.2 112 16.1 11 331 26.1 < |

- 163 **-**

| TABLE II (Continued) | | | | | | | | | | | | |
|----------------------|------------|------|--------|------|------------------|------|-----------------|--------------|-----------|-------|----------|-------------|
| Counties | Births | Rate | Deaths | Rate | Infant Deaths | Rate | Still Births | Rate | Marriages | Rate | Divorces | Rate |
| McCone | 77 | 23.6 | 22 | 6.8 | 1 | 13.0 | 1 | 13.0 | 14 | 4.3 | 4 | 1.2 |
| Madison | 99 | 16.5 | 60 | 10.0 | 1 | 10.1 | 1 | 10.1 | 37 | 6.2 | 15 | 2.5 |
| Meagher | 47 | 22.6 | 27 | 13.0 | 0 | .0 | 1 | 21.3 | 10 | 4.8 | 5 | 2.4 |
| Mineral | 49 | 23.5 | 25 | 12.0 | 1 | 20.4 | 1 | 20.4 | 257 | 123.5 | 11 | 5.3 |
| Missoula | 891 | 25.1 | 363 | 10.2 | 24 | 26.9 | 10 | 11.2 | 542 | 15.4 | 163 | 4.6 |
| Musselshell | 116 | 21.4 | 63 | 11.6 | 1 | 8.6 | 0 | .0 | 51 | 9.4 | 12 | 2.2 |
| Park | 305 | 25.4 | 130 | 10.8 | 9 | 29.5 | 2 | 6.6 | 164 | 13.7 | 15 | 1.3 |
| Petroleum | 19 | 18.5 | 12 | 11.7 | 1 | 52.6 | 0 | .0 | 2 | 1.9 | 2 | 1.9 |
| Phillips | 168 | 26.5 | 55 | 8.7 | 3 | 17.9 | 3 | 17 .9 | 51 | 9.6 | 16 | 2.5 |
| Pondera | 233 | 36.5 | 61 | 9.5 | 9 | 38.6 | 5 | 21.5 | 51 | 8.0 | 40 | 6.3 |
| Powder River | 61 | 22.7 | 26 | 9.7 | 3 | 49.2 | 0 | .0 | 19 | 7.1 | 4 | 1.5 |
| Powell | 130 | 20.6 | 56 | 8.9 | 5 | 38.5 | 1 | 7.7 | 67 | 10.6 | 20 | 3.2 |
| Prairie | 75 | 31.6 | 29 | 12.2 | 2 | 26.7 | 0 | .0 | 17 | 7.2 | 1 | 1.3 |
| Ravalli | 289 | 22.1 | 136 | 10.4 | . 7 | 24.2 | 5 | 17.3 | 109 | 8.3 | 47 | 3.6 |
| Richland | 328 | 31.6 | 67 | 6.5 | 6 | 18.3 | 4 | 12.2 | 142 | 13.7 | 19 | 1.8 |
| Roosevelt | 351 | 36.6 | 103 | 10.8 | 14 | 40.0 | 9 | 25.6 | 106 | 11.1 | 38 | 4.0 |
| Rosebud | 196 | 29.8 | 73 | 11.1 | 17 | 86.7 | 2 | 10.2 | 50 | 7.6 | 28 | 4.3 |
| Sanders | 145 | 20.8 | 76 | 10.9 | 2 | 13.8 | 2 | 13.8 | 102 | 14.6 | 9 | 1.3 |
| Sheridan | 176 | 26.4 | 56 | 8.4 | 5 | 28.4 | 2. | 11.4 | 58 | 8.7 | 7 | 1.0 |
| Silver Bow | 1,091 | 22.5 | 709 | 14.6 | 36 | 33.0 | 22 | 20.2 | 642 | 13.2 | 207 | 4.3 |
| Stillwater | 121 | 22.3 | 45 | 8.3 | 3 | 24.8 | 0 | .0 | 85 | 15.7 | 19 | 3.5 |
| Sweet Grass | 71 | 19.6 | 36 | 9.9 | 2 | 28.2 | 4 | 56.3 | 42 | 11.6 | 4 | 1.1 |
| Teton | 152 | 21.0 | 56 | 7.7 | 5 | 32.9 | 2 | 13.2 | 62 | 8.6 | 9 | 1.2 |
| Toole | 186 | 27.1 | 67 | 9.8 | 4 | 21.5 | 1 | 5.4 | . 77 | 11.2 | 20 | 2.9 |
| Treasure | 41 | 29.2 | 11 | 7.8 | 0 | .0 | 0 | .0 | 5 | 3.6 | 0 | .0 |
| Valley | 328 | 28.9 | 86 | 7.6 | 10 | 30.5 | 4 | 12.2 | 109 | 9.6 | 29 | 2.6 |
| Wheatland | 90 | 28.2 | 31 | 9.7 | 2 | 22.2 | 1 | 11.1 | 31 | 9.7 | 8 | 2.5 |
| Wibaux | 5 7 | 29.9 | 23 | 12.1 | 0 | .0 | 0 | .0 | 20 | 10.5 | 5 | 2 .6 |
| Yellowstone | 1,613 | 28.9 | 431 | 7.7 | 41 | 25.4 | 17 | 10.5 | 875 | 15.7 | 230 | 4.1 |
| TOTALS | 15,592 | 26.4 | 5,817 | 9.8 | 441 | 28.3 | 233 | 14.9 | 7,235 | 12.2 | 1,951 | 3 .3 |

TABLE III

Resident Births, Deaths, Infant Deaths, Stillbirths, Marriages, and Divorces

With Their Rates by Counties in 1951.

The Birth, Death, Marriage and Divorce Rates are per 1,000 of Population; The Infant and Stillbirth Rates per 1,000 Live Births.

| County | Births | Rate | Deaths | Rate | Infant Deaths | Rate | Still Births | Rate | Marriages | Rate | Divorces | Rate |
|---------------|--------|------|--------|------|------------------|--------------|-----------------|------|------------|------|----------|------|
| Beaverhead | 144 | 21.6 | 88 | 13.2 | 4 | 27.8 | 4 | 27.8 | 49 | 7.3 | 29 | 4.3 |
| Big Horn | 317 | 32.3 | 108 | 11.0 | 19 | 59.9 | 7 | 22.1 | 90 | 9.1 | 39 | 4.0 |
| Blaine | 224 | 26.3 | 100 | 11.7 | 12 | 53.6 | 4 | 17.9 | 53 | 6.2 | 13 | 1.5 |
| Broadwater | 62 | 21.2 | 32 | 11.0 | 4 | 64.5 | 1 | 16.1 | 41 | 14.0 | 32 | 11.0 |
| Carbon | 196 | 19.1 | 115 | 11.2 | 4 | 20.4 | 3 | 15.3 | 101 | 9.9 | 17 | 1.2 |
| Carter | 77 | 27.5 | 25 | 8.9 | 1 | 13.0 | 0 | .0 | 6 | 2.1 | 3 | 1.1 |
| Cascade | 1,588 | 29.9 | 502 | 9.5 | 36 | 2 2.1 | 30 | 18.9 | 709 | 13.4 | 197 | 3.7 |
| Chouteau | 186 | 27.7 | 65 | 9.3 | 4 | 21.5 | 1 | 5.4 | 7 9 | 11.3 | 11 | 1.0 |
| Custer | 400 | 31.6 | 121 | 9.6 | 6 | 15.0 | 1 | 2.5 | 243 | 19.2 | 48 | 3.8 |
| Daniels | 120 | 30.4 | 29 | 7.3 | 2 | 16.7 | 3 | 25.0 | 32 | 8.1 | 9 | 2.3 |
| Dawson | 295 | 32.4 | 67 | 7.4 | 5 | 16.9 | 3 | 10.2 | 55 | 6.0 | 12 | 1.3 |
| Deer Lodge | 415 | 25.1 | 176 | 10.6 | 11 | 26.5 | 7 | 16.9 | 140 | 8.5 | 47 | 2.8 |
| Fallon | 117 | 32.0 | 27 | 7.4 | 2 | 17.1 | 0 | .0 | 35 | 9.6 | 3 | 0.8 |
| Fergus | 384 | 27.4 | 158 | 11.3 | 10 | 26.0 | . 6 | 15.6 | 123 | 8.8 | 55 | 3.9 |
| Flathead | 894 | 28.4 | 317 | 10.1 | 27 | 30.2 | 18 | 20.1 | 298 | 9.5 | 81 | 2.0 |
| Gallatin | 519 | 23.7 | 186 | 8.5 | 11 | 21.2 | 7 | 13.4 | 175 | 8.0 | 40 | 1.8 |
| Garfield | 57 | 26.2 | 18 | 8.3 | 0 | .0 | 1 | 17.5 | 11 | 5.1 | 1 | 0.5 |
| Glacier | 321 | 33.3 | 107 | 11.1 | 17 | 53.0 | 5 | 15.6 | 51 | 5.3 | 15 | 1.0 |
| Golden Valley | 25 | 18.7 | 15 | 11.2 | 1 | 40.0 | 0 | .0 | 7 | 5.2 | 3 | 2.2 |
| Granite | 58 | 20.9 | 31 | 11.2 | . 1 | 17.2 | 0 | .0 | 14 | 5.0 | 1 | 0.4 |
| Hill | 490 | 34.3 | 135 | 9.5 | 20 | 40.8 | 7 | 14.3 | 172 | 12.0 | 51 | 3.6 |
| Jefferson | 74 | 18.4 | 39 | 9.7 | 1 | 13.5 | 2 | 27.0 | 48 | 12.0 | 2 | 0.5 |
| Judith Basin | 66 | 20.6 | 27 | 8.4 | 0 | .0 | 0 | .0 | 22 | 6.9 | 21 | 6.6 |
| Lake | 334 | 24.1 | 133 | 9.6 | 12 | 35.9 | 6 | 18.0 | 93 | 6.7 | 41 | 3.0 |
| Lewis & Clark | 677 | 27.6 | 263 | 10.7 | 18 | 26.6 | 12 | 17.7 | 327 | 13.3 | 202 | 8.2 |
| Liberty | 76 | 34.9 | 14 | 6.4 | 0 | .0 | 1 | 13.2 | 12 | 5.5 | 1 | 0.5 |
| Lincoln | 258 | 29.7 | 101 | 11.6 | 6 | 23.3 | 4 | 15.5 | 62 | 7.1 | 29 | 3.3 |

165

| | | TABI | E III (Cor | tinued) | | | | | | | | |
|--------------|------------|------|------------|---------|------------------|--------------|-----------------|------|-----------|------|----------|------|
| County | Births | | Deaths | | Infant Deaths | | Still Births | Rate | Marriages | Rate | Divorces | Rate |
| McCone | 102 | 31.3 | 26 | 8.0 | 3 | 29.4 | 1 | 9.8 | 14 | 4.3 | 2 | 0.6 |
| Madison | 122 | 20.3 | . 74 | 12.3 | 3 | 2 4.6 | 0 | .0 | 38 | 6.3 | 8 | 1.3 |
| Meagher | 50 | 24.1 | 25 | 12.0 | 0 | .0 | 1 | 20.0 | 14 | 6.7 | 2 | 0.9 |
| Mineral | 55 | 26.4 | 29 | 13.9 | 1 | 18.2 | 2 | 36.4 | 181 | 87.0 | 10 | 4.8 |
| Missoula | 908 | 25.6 | 311 | 8.8 | 28 | 30.8 | 12 | 13.2 | 478 | 13.5 | 123 | 3.5 |
| Musselshell | 99 | 18.3 | 72 | 13.3 | 3 | 30.3 | 1 | 10.1 | 47 | 8.7 | 19 | 3.5 |
| Park | 283 | 23.6 | 141 | 11.8 | 11 | 38.9 | 3 | 10.6 | 133 | 11.1 | 25 | 2.1 |
| Petroleum | 25 | 24.4 | 11 | 10.7 | 1 | 40.0 | 0 | .0 | 1 | 1.0 | 1 | 1.0 |
| Phillips | 174 | 27.5 | 54 | 8.5 | 4 | 23.0 | 4 | 23.0 | 53 | 8.4 | 14 | 2.2 |
| Pondera | 220 | 34.4 | 67 | 10.5 | 8 | 36.4 | 7 | 31.8 | 43 | 6.7 | 28 | 4.4 |
| Powder River | 7 5 | 27.8 | 12 | 4.5 | 0 | .0 | 0 | .0 | 24 | 8.9 | 0 | .0 |
| Powell | 156 | 24.8 | 72 | 11.4 | 1 | 6.4 | 4 | 25.6 | 49 | 7.8 | 12 | 1.9 |
| Prairie | 57 | 24.0 | 21 | 8.8 | 0 | .0 | 0 | .0 | 23 | 9.7 | 1 | 0.4 |
| Ravalli | 253 | 19.3 | 133 | 10.2 | 6 | 23.7 | 5 | 19.8 | 86 | 6.6 | 25 | 1.9 |
| Richland | 305 | 29.4 | 83 | 8.0 | 9 | 29.5 | 3 | 9.8 | 111 | 10.7 | 11 | 1.1 |
| Roosevelt | 372 | 38.8 | 115 | 12.0 | 12 | 32.3 | 3 | 8.1 | 82 | 8.6 | 34 | 3.5 |
| Rosebud | 166 | 25.3 | 50 | 7.6 | 2 | 12.0 | 5 | 30.1 | 45 | 6.8 | 20 | 3.0 |
| Sanders | 157 | 22.5 | 76 | 10.9 | 5 | 31.8 | 1 | 6.3 | 61 | 8.7 | 24 | 3.4 |
| Sheridan | 174 | 26.1 | 62 | 9.3 | 1 | 5.7 | 3 | 17.2 | 66 | 9.9 | 4 | 0.6 |
| Silver Bow | 1,219 | 25.2 | 721 | 14.9 | 36 | 29.5 | 25 | 20.5 | 605 | 12.5 | 205 | 4.2 |
| Stillwater | 123 | 22.7 | 43 | 7.9 | 2 | 16.3 | 0 | .0 | 83 | 15.3 | 7 | 1.3 |
| Sweet Grass | 74 | 20.4 | 37 | 10.2 | 3 | 40.5 | 0 | .0 | 26 | 7.2 | . 8 | 2.2 |
| Teton | 176 | 24.3 | 56 | 7.7 | 1 | 5.7 | 2 | 11.4 | 57 | 7.9 | 7 | 1.0 |
| Toole | 188 | 27.4 | 77 | 11.2 | 3 | 16.0 | 4 | 21.3 | 49 | 7.1 | 27 | 3.9 |
| Treasure | 34 | 24.3 | 7 | 5.0 | 0 | .0 | 0 | .0 | 6 | 4.3 | 0 | .0 |
| Valley | 331 | 29.2 | 103 | 9.1 | 7 | 21.1 | 5 | 15.1 | 95 | 8.4 | 17 | 1.5 |
| Wheatland | 93 | 29.2 | 36 | 11.3 | 2 | 21.5 | 1 | 10.8 | 20 | 6.3 | 7 | 2.2 |
| Wibaux | 42 | 22.0 | 9 | 4.7 | 1 | 23.8 | 0 | .0 | 27 | 14.2 | 1 | 0.5 |
| Yellowstone | 1,522 | 27.2 | 442 | 7.9 | 38 | 25.0 | 23 | 15.1 | 737 | 13.2 | 192 | 3.4 |
| Total | 15,929 | 26.8 | 5,964 | 10.0 | 425 | 26.7 | 248 | 15.6 | 6,302 | 10.6 | 1,837 | 3.1 |

41

TABLE IV
Summary of Events and Rates, Montana 1950-1951

| Event | 19 | 1951 | | | | | |
|-------------------|--------|------|--------|------|--|--|--|
| *Births | 15,592 | 26.4 | 15,929 | 26.8 | | | |
| *Deaths | 5,817 | 9.8 | 5,964 | 10.0 | | | |
| *Marriages | 7,235 | 12.2 | 6,302 | 10.6 | | | |
| *Divorces | 1,951 | 3.3 | 1,837 | 3.1 | | | |
| **Infant Deaths | 441 | 28.3 | 425 | 26.7 | | | |
| **Still Births | 233 | 14.9 | 248 | 15.6 | | | |
| **Maternal Deaths | 20 | 1.3 | 10 | 0.6 | | | |

^{*} Per thousand population.

** Per thousand live births.

All other 100,000 population.

TABLE IV α

RESIDENT DEATHS BY CAUSE 1950-1951

Internation Classification of Deaths
Abridged Sixth Revision

| | 19 | 50 | | 19 | 51 |
|--------------------------------------|-------------|-------------|-----------|----------|-------------|
| Code No. Cause | Number | Rate | | Number | Rate |
| I. INFECTIOUS DISEASES | | | | | |
| 001-138 Total | 182 | 30.8 | | 159 | 26.8 |
| Tuberculosis Total | 114 | 19.3 | | 85 | 14.3 |
| 001-008 T.B. respiratory | 95 | 16.1 | | 73 | 12.3 |
| 010 T. B. meniges | 9 | 1.5 | | 4 | 0.7 |
| 011-019 T. B. Other Forms | 10 | 1.7 | | 8 27 | 1.3 4.5 |
| 020-029 Syphilis | 36 0 | 6.1 | | 1 | 0.2 |
| 040-042 Typhoid 045-048 Dysentery | 2 | 0.3 | | 1 | 0.2 |
| 049 Food Poisoning | 0 | .0 | | 2 | 0.2 |
| 051 Strep. Sore Throat | 4 | 0.7 | | 3 | 0.5 |
| 052 Erysipelas | Ö | .0 | | ĭ | 0.2 |
| 053 Septicemia | 5 | 0.9 | | 6 | 1.0 |
| 055 Diphtheria | 2 | 0.3 | | 0 | .0 |
| 056 Whooping Cough | 10 | 1.7 | | 1 | 0.2 |
| 057 Meningoccus Infection | 1 | 0.2 | | 5 | 0.8 |
| 061 Tetanus | 0 | .0 | | 1 | 0.2 |
| 080 Poliomyelitis | 3 2 | 0.5 | | 6 4 | 1.0 |
| 082 Encephalitis Infection | 0 | 0.3 | | 0 | 0.7 1.5 |
| 085 Measles 089 Mumps | 0 | .0 | | 9 | 0.3 |
| 092 Infection Hepatitis | í | 0.2 | | ī | 0.2 |
| 093 Glandular Fever | ī | 0.2 | | Ō | .0 |
| 104 Spotted Fever | 1 | 0.2 | | 0 | .0 |
| 108-138 Other Infections | 0 | .0 | | 4 | 0.7 |
| II. NEOPLASMS | | | | | |
| 140-239 Total | 7 59 | 128.4 | | 816 | 137.3 |
| Malignant | 733 | 124.0 | | 802 | 135.0 |
| 140-148 Buccal cavity | 15 | 2.5 | | 18 | 3.0 |
| 150 Esophagus | 12 102 | 2.0 17.3 | | 5 115 | 0.8 19.4 |
| 151 Stomach 152-153 Intestine | 74 | | | 87 | 14.6 |
| 152-155 Intestine 154 Rectum | 35 | 5.9 | | 25 | 4.2 |
| 160-165 Respiratory | 84 | 14.2 | | 92 | 15.5 |
| 170 Breast | 60 | 10.2 | | 59 | 9.9 |
| 171-174 Uterus | 39 | 6.6 | | 47 | 7.9 |
| 177 Prostate | 46 | 7.8 | 0.01.01 | 51 | 8.6 |
| 190-191 Skin | 10 | 1.7 | | 11 | 1.9 |
| 196-197 Bone — Connective Tissue | 5 | 0.9 | 4.5 | 3 | 0.5 |
| 155-199 Other malignant | 195 | 33.0 | | 213 | 35.9 |
| 204 Leukemia | 37 | 6.3 | | 32 | 5.4 |
| 200-205 Lymphatic | 19 | 3.2 | | 44 | 7.4 2.4 |
| 210-239 Benign Neoplasm | 26 | 4.4 | en" renii | 14 | 2.4 |

RESIDENT DEATHS BY CAUSES 1950-1951 (Continued)

| RESIDENT DEATHS BY CAUSES 1950-1951 (Commued) | | | | | | | | | | | |
|--|---|---|--|--|--|--|--|--|--|--|--|
| Code I | No. Cause ALLERGY, ENDOCRINE, ANI | Number | Rate | Number | Rate | | | | | | |
| 240-289 240-245 250-252 260 270-277 | Total Allergic Goitre and Thyroid Diabetes Mellitus Other Endocrine glands Others | 93 29 4 49 6 5 | 15.7 4.9 0.7 8.3 1.0 0.9 | 101 23 5 58 8 7 | 17.0 3.9 0.8 9.8 1.3 1.2 | | | | | | |
| IV. E 290-299 290-293 | BLOOD AND BLOOD FORMIN Total Anemias Other Blood Forming | NG ORGANS 28 19 9 | 4.7 3.2 1.5 | 9 4 5 | 1.5 0.7 0.8 | | | | | | |
| V. M 300-326 300-309 310-326 | ENTAL DISORDERS Total Psychosis Psychoneuroses | 41 27 14 | 6.9 4.6 2.4 | 23 04 19 | 3.9 0.7 3.2 | | | | | | |
| VI. 330-398 330-334 340 345 353 391-398 | NERVOUS Total Vascular Lesions Meningitis simple Multiple Sclerosis Epilepsy Diseases of Ear Other Nervous | 679 619 9 9 8 4 30 | 114.9 104.7 1.5 1.5 1.4 0.7 5.1 | 672 618 6 11 11 5 21 | 113.1 104.0 1.0 1.9 1.9 0.8 3.5 | | | | | | |
| VII. 400-468 400-443 400-402 410-416 420-422 430-434 440-443 440-445 450-456 460-468 | CIRCULATORY Total Total Heart Rheumatic Fever Rheumatic Heart Degenerative Heart Other Heart Hyperiensive Heart Hypertension without Heart Arteries Other Circulatory | 2,148 1,957 6 92 1,514 164 181 43 126 21 | 363.4 331.1 1.0 15.6 256.2 27.7 30.6 7.3 21.3 3.6 | 2,360 2,159 8 99 1,636 193 224 36 29 | 397.2 363.4 1.3 16.7 275.4 32.5 37.7 6.1 22.7 4.9 | | | | | | |
| VIII. 470-527 470-475 480-483 490 491 492-493 500-502 510-527 | RESPIRATORY Total Upper respiratory Influenza Lobar Pneumonia Broncho Pneumonia Other Pneumonia Bronchitis Other respiratory | 253 7 23 61 47 49 13 53 | 42.8 1.2 3.9 10.3 8.0 8.3 2.2 9.0 | 227 3 30 39 38 44 8 65 | 38.2 0.5 5.0 6.6 6.4 7.4 1.3 10.9 | | | | | | |
| IX. I 530-587 530-539 540-545 550-553 560-570 571-572 581 584-585 | DIGESTIVE Total Buccal and Esophagus Ulcer, Stomach and Duodenum Appendicitis Intestinal obst. and hernia Gastro-enteritis (over 4 weeks) Cirrhosis Liver Cholelithiasis & cystitis Other digestive | 236 1 47 12 47 20 52 28 29 | 39.9 0.2 8.0 2.0 8.0 3.4 8.8 4.8 4.9 | 237 5 41 18 40 17 54 30 32 | 39.9 0.8 6.9 3.0 6.7 2.9 9.1 5.0 5.4 | | | | | | |
| X. G 590-637 590 591-594 600-604 610 | ENITOURINARY Total Acute Nephritis Chronic Nephritis & Nephrosis Kidney infection & calculi Hypertrophy Prostate Other Genitourinary | 136 11 69 18 30 8 | 23.0 .9 11.7 3.1 5.1 1.4 | 130 5 80 15 22 8 | 21.9 0.8 13.5 2.5 3.7 1.3 | | | | | | |

RESIDENT DEATHS BY CAUSES 1950-1951 (ontinued)

| | | 195 | 0 | 1951 | |
|--|-------------|-----------|---------------------|-----------|---------------------|
| Code No. Cause XI. PUERPERAL | | Number | Rate | Number | Rate |
| 640-689 Total 640-641 l | | 20 | 3.4 | 10 | 1.7 |
| 681-684 Sepsis of Pregnanc | у | 4 | 0.7 | 2 | 0.3 |
| 642-652 (685-686) Toxemias, Pregnan | су | 5 | 0.9 | 2 | 0.3 |
| 643-644 670-672 Hemorrhage, Preg | nancy | 2 3 | 0.3 | 1 | 0.2 |
| 650 Abortion aseptic 651 Abortion septic | | 2 | 0.5 0.3 | 2 0 | 0.3 |
| Other pregnancy | | 4 | 0.7 | 3 | 0.5 |
| XII. SKIN AND CELL 690-716 Total | ULAR | 10 | 1.7 | 10 | 1.7 |
| 690-698 Skin and Subcutane | ous tissue | 2 | 0.3 | 2 | 0.3 |
| 700-716 Other skin XIII. BONES AND MO | MEMEMT | 8 | 1.4 | 8 | 1.3 |
| 720-749 Total | VEMENI | 14 | 2.4 | 11 | 1.9 |
| 720-725 Arthritis 730-738 Osteomyelitis | | 11 1 | 1.9 0.2 | 8 1 | 1.3 0.2 |
| Other muscular | | 2 | 0.3 | 2 | 0.2 |
| XIV. CONGENITAL M | ALFORMATION | | | | 4.4.0 |
| 750-759 Total 750-759 Congenital malform | nations | 75 75 | 12.7 12.7 | 88 88 | 14.8 14.8 |
| XV. EARLY INFANCY | | | | | |
| 760-776 Total 760-761 Birth Injuries | | 246 52 | 41.6 8.8 | 262 45 | 4 4.1 7.6 |
| 762 Atelectasis | | 44 | 7.4 | 65 | 10.9 |
| 763-768 Infection, newborn | | 14 | 2.4 | 14 | 2.4 |
| 770 Hemolytic, newbor | n | 20 11 | 3.4 1.9 | 17 9 | 2.9 1.5 |
| 769-772 Defined, newborn 773-776 Immaturity and oth | er | 105 | 17.8 | 113 | 19.0 |
| XVI. SENILITY AND | ILL-DEFINED | 205 | 2.4.77 | 222 | 27.5 |
| 780-795 Total 794 Senility | | 205 77 | 34.7 13.0 | 223 77 | 37.5 13.0 |
| 780-793 \ | | | | | |
| 795 Ill Defined and Un | | 128 | 21.7 | 146 | 24.6 |
| XVII. EXTERNAL CA 800-999 All External | USES | 692 | 117.1 | 625 | 105.4 |
| Total Accidents | | 545 | 92.2 | 525 | 88.4 |
| 800-802 Railway | | 17 | 2.9 | 21 | 3.5 |
| 810-835 Motor Vehicle | | 190 6 | 32.1 1.0 | 187 14 | 31.5 2.4 |
| 850-858 Water Transport 860-866 Aircraft | | 23 | 3.9 | 14 | 2.4 |
| Other Transport | | 5 | 0.9 | 3 | 0.5 |
| 870-888 Liquid and solid po | ison | 5 | 0.9 | 3 | 0.5 |
| 890-895 Gas poison | | 12 | 2.0 | 11 | 1.9 |
| 900-904 Falls 912 Machinery | | 91 19 | 15.4 3.2 | 88 22 | 14.8 3.7 |
| 916 Fire and Explosion | | 42 | 7.1 | 42 | 7.1 |
| 917-918 Hot substances | | 1 | 0.2 | 2 | 0.3 |
| 919 Firearms | | 25 | 4.2 | 25 | 4.2 |
| 929 Drowning Other accidents | | 33 76 | 5.6 12. 9 | 25 68 | 4.2 11.4 |
| 970-979 Suicides | | 123 | 20.8 | 85 | 14.3 |
| 980-985 Homicides | | 24 | 4.1 | 15 | 2.5 |

2

| | | AGE | GROUPS | | | |
|----------|-----|----------|---------------|--------|----|-------|
| Abridged | 6th | Revision | International | Causes | of | Death |

| | | 1 to | 5 to | 10 to | 15 to | 20 to | 25 to | 30 to | 35 to | 40 to | 45 to | 50 to | 55 to | 60 to | 65 to | 70 to | 7.5 | |
|--|-----|---------|---------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|---------|-------------------|
| CAUSES AND CODE NUMBERS | 1 | 4 | 9 | 14 | 19 | 24 | 29 | 34 | 39 | 44 | 49 | 54 | 59 | 64 | 69 | 74 | | Totals |
| Tuberculosis, Respiratory system 001-008 | 2 | 4 | 1 | 1 | 2 | 5 | 2 | 2 | 6 | 3 | 8 | 9 | 7 | 12 | 11 | 12 | 8 | 95 |
| Tuberculosis, other forms 010-019 | 1 | 7 | 2 | 2 | | | 1 | 1. | 1 | 1 | 3 | 1 2 | 1 2 | | | 1 | ; | 19 |
| Syphilis & its sequele 020-029 | . 4 | •• | | • • | | •- | | | 1 | 1 | 3 | 2 | 2 | 4 | 8 | 5 | 6 | 36 |
| Infectious diseases, commonly arising in intestinal tract, 040-049 | 1 | | | | | | | | | | | | | | | | 1 | 2 |
| Other bacterial diseases 050-064 | 13 | 3 | 1 | ï | | | ï | | ï | 1 | 1 | | | | | | | 22 |
| Dis. Attrib. to viruses 080-096 | 1 | | | | | | | | | | | 2 | | 1 | 2 | 1 | | 7 |
| Rocky Mt. Spotted Fever 104 | •• | | | •• | •- | | •• | •- | •• | | | 1 | | | | | | 1 |
| Malignantneoplasm — buccal cavity & pharynx 140-148 | | | | | | | | | | | 1 | 1 | 2 | | 3 | 3 | 5 | 15 |
| Malignant neoplasm — digestive organs | | | | | | | | | | •- | 1 | 1 | 2 | | J | J | 3 | 13 |
| & peritoneum 150-159 | | | | | 1 | 1 | 1 | 1 | 4 | 5 | 10 | 12 | 30 | 41 | 64 | 45 | 83 | 298 |
| Malignant neoplasm — respiratory system, | | | | | | | | | | | | | - | | | | | 270 |
| 160-165 | | ** | | | | | 1 | | 1 | 1 | 5 | 9 | 13 | 15 | 16 | 9 | 14 | 84 |
| Malignant neoplasm — breast & genito- | | | | | | | | 2 | 8 | 7 | 9 | 17 | 25 | 26 | 33 | 42 | 51 | 220 |
| urinary organs, 170-181 | ** | | | | | | •- | 2 | 0 | , | 9 | 17 | 43 | 20 | 33 | 42 | 51 | 220 |
| sites, 190-199 | 1 | 2 | | 1 | | 1 | 3 | 4 | 3 | 1 | 4 | 5 | 6 | 3 | 7 | 6 | 13 | 60 |
| Neoplasms—lymphatic & Haemeatop. | | | | _ | | _ | _ | | | | | | | | | | | |
| tissues, 200-205 | | 3 | 4 | 2 | l | 2 | 3. | | 1 1 | 4 2 | 2 | 4 | 6 | 8 | 3 | 2 | 11 | 56 |
| Benign neoplasms, 210-229 | 1 | 1 | 1 | •• | 1 | 1 | •• | 2 | 1 | 1 | 1 | 1 | 1 | 2. | 1 | 1 | ĩ | 13 13 |
| Neoplasms — unspecified nature, 230-239 Allergic disorders, 240-245 | 1 | 1 | 1 | | | 1 | | 2 | 1 | | 2 | 3 | 1 | 3 | 2 | 6 | 8 | 29 |
| Diseases — thyroid gland, 250-254 | • | | - | •• | •- | | | - | • | | | ĭ | | ĭ | 1 | | 1 | 4 |
| Diabetes mellitus, 260 | | 1 | | | | 2 | 1 | | 2 | 1 | 2 | 2 | 6 | 8 | 5 | 6 | 13 | 49 |
| Diseases — other end. glands, 270-277 | 6 | | | | | | | | | | | | | | ; | | | 6 |
| Avitaminoses & other met. diseases, 280-289 | | 3 | •• | | •- | •• | | | | | | | | 1 | 1 | | | 5 |
| Diseases of blood & blood-forming | . 1 | | | | | 1 | 1 | | | | | 1 | 1 | 5 | 2 | 5 | 10 | 28 |
| organs, 290-299 Psychoses, 300-309 | 1 | | •- | | | 1 | • | - | | | • | | | 1 | 3 | 2 | 21 | 2 7 27 |
| Disorders — character, behavior & | | | | | | | | | | | | | | _ | | | | |
| intelligence, 320-326 | | | | | | | | | 1 | 3 | 1 | 2 | 1 | 5 | 1 | | | 14 |
| Vascular lesions effecting central nervous | 1 | 1 | 1 | | | | 1 | 1 | 5 | 8 | 14 | 20 | 46 | 56 | 01 | 103 | 271 | 619 |
| system, 330-334 | 1 | 1 | 1 | | | | 1. | 1 | Э. | O | 14 | 20 | 70 | 50 | 71 | 100 | 4/1 | 019 |

| Inflamatory diseases - central nervous | _ | | | | | | | | | | | | 5 | Su. | | | No. | _ |
|---|------|-----|----|----|-----|----|----|----|-----|----|----|----|-----|-----|----------|--------|---------|----------|
| system, 340-345 | 5 | 6 | 1 | | 1 | 1 | | 1 | 1 | 4 | 1 | 1 | | 2 | | | 2 | 26 |
| Other diseases of central nervous | 1 | | 1 | | | • | | | | | | | | 2 | -11 | R | | 20 |
| system, 350-357 | , ,1 | • • | 1 | 1 | | 2 | 1 | | | 1 | 1 | •• | 3 | 3 | 4 | 4 | 8 | 30 |
| Diseases of eary & mastoid process | 1 | 1 | | | | | | | 1 | | | | | | 1 | | | 4 |
| 390-398 Rheumatic fever, 400-402 | 1 | 1 | | 1 | | | 4 | | 1 | ä | •• | | •• | | 1 | | | 4 7 |
| Chronic rheumatic heart disease, 410-416 | | | | 1 | 1 | •• | 3 | 3 | 3 | 4 | 9 | 11 | 7 | 17 | 1.4 | | 11 | 92 |
| Arteriosclerotic & degenerative heart | | •• | •• | 1 | 1 | | 3 | 3 | 3 | 4 | 9 | 11 | , | 17 | 14 | 0 | 11 | 92 |
| disease, 420-422 | | 1 | | | 1 | 2 | | | | 27 | 49 | 67 | 121 | 193 | 263 | 227 | 540 | 1,514 |
| Other diseases of heart, 430-434 | ï | î | | | | 2 | ï | ï | 3 | 4 | 11 | 7 | 15 | 18 | 28 | 21 | 53 | 164 |
| Hypertensive disease, 440-447 | • | 1 | | | ï | •• | 1 | î | 3 | ĭ | 8 | 6 | 15 | 21 | 27 | | 108 | 224 |
| Diseases of arteries, 450-456 | | | 1 | | • | | | 2 | U | 1 | U | 4 | 5 | 6 | 8 | 15 | 85 | 126 |
| Diseases of veins & other diseases of | | •• | • | •• | •• | | •• | _ | | | | | 0 | 0 | 0 | 10 | 00 | 120 |
| circulatory system, 460-468 | | | 1 | | 1 | 1 | | | | 1 | | 1 | 1 | 3 | 3 | 4 | - 5 | 21 |
| Acute upper respiratory infections, 470-475 | ï | . 1 | 2 | | | - | | •- | | î | | î | | | | 1 | Ü | . 7 |
| Influenza | 3 | î | | | | | | 77 | | î | | 2 | | | • | 3 | 13 | 23 |
| Phumonia, 490-493 | 39 | 9 | 1 | | 1 | | 1 | 1 | 2 | 6 | 4 | 8 | 4 | 11 | 11 | 17 | 42 | 157 |
| Bronchitis, 500-502 | 4 | 2 | | | | | | | | | | | | 1 | 1 | | 5 | 13 |
| Other diseases of respiratory system | | | | | | | | | | | | | | | | | | |
| 510-527 | 1 | 2 | | 1 | | | | | | | 1 | 5 | 5 | 15 | 9 | 4 | 10 | 53 |
| Diseases of buccal cavity & Oesophagus, | | | | | | | | | | | | | | | | | | |
| 530-5391 | | ٠ | | | | | ** | 1 | | | | | | | | | | 1 |
| Diseases of stomach & duodenum, 540-545 | 1 | | | | | | | 1 | | 3 | 2 | 3 | 6 | 12 | 1 | 12 | 6 | 47 |
| Appendicitis, 550-553 | | | | | ** | 1 | 1 | 1 | 2 | | 1 | | 1 | 1 | 1 | 2 | 1 | 12 |
| Hernia of abdominal cavity, 560-561 | | | | | ** | | •- | | 1 | | •- | 1 | 1 | 2 | 1 | | 5 | 11 |
| Other diseases of intestines & peritoneum, | | | | | | | | | | | _ | | | | | _ | | |
| 570-578 | | | | | | | | | | 1 | 2 | 4 | 4 | 4 | 9 | 6 | 20 | 67 |
| Diseases of liver, gallbladder & pancreas | | | | | 4 | 2 | 2 | 2 | 1 | , | ~ | , | 10 | 1.4 | _ | 1. | 20 | .00 |
| 580-587 | | | | | 1 | 2 | 2 | 3 | 2 | 6 | / | 6 | 10 | 14 | 9. 15 | 16 | 24 | 98 |
| Npehritis & nephrosis, 590-594 | 2 | 2 | | | *** | 2 | 4 | S | 1 | 3 | 2 | 3 | 2 | 5 | | 13 | 24 | 80 21 |
| Other diseases of urinary system, 600-609 | 1 | | •• | •• | 27 | •• | | | 1 | | J | 1 | •• | 1 | 5 | 3 5 | 6 23 | 33 |
| Diseases of male genital organs, 610-617 | | | | | | | | | | | | | •• | 1 | 4 | 5 | 23 | 33 |
| Diseases of breast, ovary, fallopian tube | | | | | | | | | | | 1 | | | | | | | 1 |
| & parametrium, 620-626 | | | | | | | | | | ** | 1 | ** | ** | ** | ** | | | 1 |
| organs, 630-637 | | | | | | | | | | | | | | | | | | 1 |
| Complications — pregnancy, 640-649 | | | | | | 2 | | 1 | 1 | | •• | | | | | | •• | 4 |
| Abortion, 650-652 | | • | •• | - | ï | _ | 2 | î | î | •• | | | •• | | | | • | 5 |
| Delivery without complications, 660 | | | | •• | | 1 | - | 1 | - 3 | | | | •• | | | | • | 2 |
| Delivery with specified complication | | | | •• | | | | • | | | | • | | • | | | | 2 |
| 670-678 | | | | | | | | 2 | | 1 | | | | | | | | . 3 |
| Complications of the puerperium, 680-689 | | | | | | 1 | 1 | | 4 | - | | | | | | | | 6 |
| Infections of skin & subcutaneous tissue | | | | | | | 1 | | | | | | | | | | 1 | 2 |
| dividenting As Arms to passessessions despite seems | | | | | | | | | | | | | | | | | | _ |

TÄBLE V (Continued)

MONTANA-1950-CAUSES OF DEATH BY AGE GROUPS

Abridged 6th Revision International Causes of Death

AGE GROUPS

| | | I to | 5 to | 10 to | 15 to | 20 to | 25 to | 30 to | 35 to | 40 to | 45 to | 50 to | 55 to | 60 to | 65 to | 70 to | 75+ | |
|---|----------------------------|----------------------------------|---------------------------------|---------------------------------|----------------------------------|---------------------------------------|--------------------------|-----------------------------------|---|-------------------------|---------------------------------|------------------------------------|---------------------------------|---------------------------|-----------------------------|----------------------|----------------------------|--|
| CAUSES AND CODE NUMBERS | 1 | 4 | 9 | 14 | 19 | 24 | 29 | 34 | 39 | 44 | | 54 | 59 | 64 | 69 | 74 | | Totals |
| Other diseases of skin & subcutaneous tissue, 700-716 | 1 | | | | 1 | | | | | 1 | | 1 | | | 1 | 1 | 2 | 8 |
| Arthritis & rheumatism except fever 720-727 | | | | | | | •• | | | 1 | 1 | | | 1 | 2 | 1 | 5 | 11 |
| Ostemovelitis, 730 | | | | | | | | | | | •- | | | | | | • | • |
| Other diseases of musculoskeletal system, | | 1 | | | 1 | | | | | | | | | | | | | 2 |
| Cong. Malformations, 750-759 | 68 | 4 | 1 | 1 | • | | | ï | •- | | • | | •- | | | | Τ̈ | 75 |
| Birth injuries, asphyxia & infect. of newborn, 760-769 | | | 1 | - | •• | •• | | • | | •• | •• | •• | | | | | | 115 |
| Other diseases peculiar to early infancy, | 114 | | 1 | | | | | | •• | | | • | | | | •• | | 113 |
| 770-776 | 131 | | | | | | | | | | | | | | | | | 131 |
| Symptons referrable to systems or organs 780-789 | | | | - | | 2 | | | 2 | 2 | 2 | 5 | 2 | 13 | 12 | 11 | 21 | 72 |
| Senility & ill-defined disesase, 790-795 | 7 | 2 | | | ï | | | ï | 2 | | 1 | 2 | 6 | 9 | 6 | 11 | 85 | 1 3 3 |
| CAUSES — TOTALS | 422 | 61 | 19 | 13 | 16 | 30 | 36 | 44 | 91 | | | | | | <u> </u> | | | |
| | | | | | | | | - | | | | | | | | | | |
| Railway accident, 800-802 | | 1 | | | | 1 | 1 | 1 | . 3 | 1 | 2 | 4 | 1 | | 1 | 1 | | 17 |
| Railway accident, 800-802 | 2 | 1 9 | 5 | 7 | 25 | $\frac{1}{23}$ | 1 14 | 1 14 | 11 | 1 22 | 2 7 | 4 | 1 7 | 6 | 1 10 | 1 7 | 5 | 17 177 |
| Motor vehicle traffic Acc., 810-825 | | _ | 5 | 7 | 25 1 | 1 23 2 | 1 14 3 | 1 14 | | 1 22 | 2 7 1 | 3 | 1 7 1 | 6 | 10 | 1 7 2 | 5 | |
| Motor vehicle traffic Acc., 810-825 | | _ | 5 | 7 | 25 1 | | | 1 14 | | 22 | 2 7 1 1 | 3 | 1 7 1 | 6 1 1 | 1 10 | 1 7 2 1 | ; ; | 177 13 5 |
| Motor vehicle traffic Acc., 810-825 Motor vehicle traffic non. Acc., 830-835 Other road vehicle acc., 840-845 Water transport acc., 850-858 | 2 | 9 | 5 | 7 2 | 1 | | | 1 14 3 | | | 2 7 1 1 1 | 4 3 | 1 7 1 | 6 1 1 | 1 10 | 1 7 2 1 | 5 1 | 177 13 5 6 |
| Motor vehicle traffic Acc., 810-825 Motor vehicle traffic non. Acc., 830-835 Other road vehicle acc., 840-845 Water transport acc., 850-858 | | 9 | 5 1 | 7 2 1 | 25 1 2 | | | 1 14 3 2 | | | 2 7 1 1 1 | 4 3 1 | 1 7 1 | 6 1 1 | 1 10 | 1 7 2 1 | 5 1 | 177 13 5 |
| Motor vehicle traffic Acc., 810-825 Motor vehicle traffic non. Acc., 830-835 Other road vehicle acc., 840-845 Water transport acc., 850-858 Aircraft Acc., 860-866 Acc. poisoning by soldis & liquid | 2 | 9 | 5 1 | 7 2 1 | 1 | | | 1 14 3 2 | | | 2 7 1 1 | 4 3 1 | 1 7 1 | 6 1 1 | 1 10 | 1 7 2 1 | 5 1 | 177 13 5 6 23 |
| Motor vehicle traffic Acc., 810-825 Motor vehicle traffic non. Acc., 830-835 Other road vehicle acc., 840-845 Water transport acc., 850-858 Aircraft Acc., 860-866 Acc. poisoning by soldis & liquid substances, 870-888 | 2 1 | 9 | 5 1 | 7 2 1 | 1 | | | 1 14 3 2 | | | 2 7 1 1 | 4 3 1 | 1 7 1 | 6 1 1 | 1 10 | 1 7 2 1 | 5 1 | 177 13 5 6 23 |
| Motor vehicle traffic Acc., 810-825 Motor vehicle traffic non. Acc., 830-835 Other road vehicle acc., 840-845 Water transport acc., 850-858 Aircraft Acc., 860-866 Acc. poisoning by soldis & liquid substances, 870-888 Acc. poisoning by gases & vapors, 890-895 | 2 1 | 9 | 5 1 | 7 2 1 | 1 | | | 1 14 3 2 1 | | | 2 7 1 1 1 1 | 4 3 1 1 | 1 7 1 | 6 1 1 | 1 | 1 7 2 1 | ï | 177 13 5 6 23 |
| Motor vehicle traffic Acc., 810-825 Motor vehicle traffic non. Acc., 830-835 Other road vehicle acc., 840-845 Water transport acc., 850-858 Aircraft Acc., 860-866 Acc. poisoning by soldis & liquid substances, 870-888 Acc. poisoning by gases & vapors, 890-895 Accidental falls, 900-904 | 2 1 1 | 9 1 2 2 | 5 1 | 7 2 1 1 | 1 2 | 5 1 2 | 3 4 2 | 3 2 1 | 11 1 3 1 1 2 | 2 | 2 7 1 1 1 1 4 | | 1 4 | 1 1 | 1 | 1 7 2 1 | ī 1 46 | 177 13 5 6 23 5 12 91 |
| Motor vehicle traffic Acc., 810-825 Motor vehicle traffic non. Acc., 830-835 Other road vehicle acc., 840-845 Water transport acc., 850-858 Aircraft Acc., 860-866 Acc. poisoning by soldis & liquid substances, 870-888 Acc. poisoning by gases & vapors, 890-895 Accidental falls, 900-904 Other Accidents, 910-936 | 2 1 1 15 | 9 1 2 2 19 | 5 1 | 7 2 1 10 | 1 2 15 | 2 5 1 2 15 | 3 4 2 6 | 3 2 1 1 9 | 11 1 3 1 1 2 12 | 2 1 3 9 | 2 7 1 1 1 4 8 | 1 1 1 10 | 1 4 7 | 1 1 | 1 3 8 11 | 13 | 1 1 46 11 | 177 13 5 6 23 5 12 91 196 |
| Motor vehicle traffic Acc., 810-825 Motor vehicle traffic non. Acc., 830-835 Other road vehicle acc., 840-845 Water transport acc., 850-858 Aircraft Acc., 860-866 Acc. poisoning by soldis & liquid substances, 870-888 Acc. poisoning by gases & vapors, 890-895 Accidental falls, 900-904 Other Accidents, 910-936 ACCIDENTAL — TOTALS | 2 1 1 | 9 1 2 2 | 5 1 1 11 18 | 7 2 1 10 21 | 1 2 | 2 5 1 2 15 49 | 3 | 3 2 1 1 9 | 11 1 3 1 1 2 12 34 | 1 3 9 38 | 25 | 1 1 1 1 10 20 | 1 4 7 | 1 1 4 15 | 1 3 8 11 34 | 13 38 | 1 1 46 11 | 177 13 5 6 23 5 12 91 196 545 |
| Motor vehicle traffic Acc., 810-825 Motor vehicle traffic non. Acc., 830-835 Other road vehicle acc., 840-845 Water transport acc., 850-858 Aircraft Acc., 860-866 Acc. poisoning by soldis & liquid substances, 870-888 Acc. poisoning by gases & vapors, 890-895 Accidental falls, 900-904 Other Accidents, 910-936 ACCIDENTAL — TOTALS Suicide & self-inflicted injury, 970-979 | 2 1 1 15 | 9 1 2 2 19 | | | 1 2 15 | 2 5 1 2 15 | 3 4 2 6 | 3 2 1 1 9 | 11 1 3 1 1 2 12 | 2 1 3 9 | | 1 1 1 10 | 1 4 7 | 1 1 | 1 3 8 11 | 13 | 1 1 46 11 | 177 13 5 6 23 5 12 91 196 |
| Motor vehicle traffic Acc., 810-825 Motor vehicle traffic non. Acc., 830-835 Other road vehicle acc., 840-845 Water transport acc., 850-858 Aircraft Acc., 860-866 Acc. poisoning by soldis & liquid substances, 870-888 Acc. poisoning by gases & vapors, 890-895 Accidental falls, 900-904 Other Accidents, 910-936 ACCIDENTAL — TOTALS | 2 1 15 19 | 9 1 2 2 19 34 | | | 1 2 15 43 1 2 | 2 5 1 2 15 49 7 | 3 | 3 2 1 1 9 31 14 | 11 | 1 3 9 38 10 | 25 7 5 | 1 1 1 10 20 11 2 | 1 4 7 20 15 | 1 1 4 15 | 1 3 8 11 34 | 13 38 | 1 1 46 11 | 177 13 5 6 23 5 12 91 196 545 |
| Motor vehicle traffic Acc., 810-825 Motor vehicle traffic non. Acc., 830-835 Other road vehicle acc., 840-845 Water transport acc., 850-858 Aircraft Acc., 860-866 Acc. poisoning by soldis & liquid substances, 870-888 Acc. poisoning by gases & vapors, 890-895 Accidental falls, 900-904 Other Accidents, 910-936 ACCIDENTAL — TOTALS Suicide & self-inflicted injury, 970-979 Homicide & injury inflicted by other persons, | 2 1 15 19 | 9 1 2 2 19 34 | | | 1 2 15 | 2 5 1 2 15 49 | 3 | 3 2 1 1 9 | 11 1 3 1 1 2 12 34 10 | 1 3 9 38 10 | 25 7 | 1 1 1 10 20 | 1 4 7 | 1 1 4 15 | 1 3 8 11 34 | 13 38 | 1 1 46 11 | 177 13 5 6 23 5 12 91 196 545 |

-172 -

| Tuberculosis, Respiratory system, 001-008 | 1 | | 1 | | 1 | 4 | 2 | 7 | 2 | 3 | 6 | 11 | 4 | 11 | 9 | 3 | 8 | 73 |
|--|--------|---|--------|-----|--------|----|----|--------|--------|---------|---------|----|----------|------------|----------|----------|----------|-----------|
| Tuberculosis, 0ther forms, 010-019 | | 3 | 1 1 | | 1 | 1 | 2 | 7 1 | 2 2 | 1 | | 3 | 5 | $\ddot{2}$ | 2 | 2 | | 12 |
| Syphilis & its sequelae, 020-029 | | | | | | | | | | 1 | •- | 3 | 5 | 2 | 6 | 2 | 8 | 27 |
| Infectious diseases commonly arising in intestinal tract, 040-049 | | | | | | | | | 1 | | | 1 | | | 1 | | 1 | 4 |
| Other bacterial diseases, 050-064 | 7 | 3 | 2 | | ï | | | ï | | | | 1 | ï | | | ï | | 17 |
| Diseases, Attri. to viruses, 080-096 | 7 4 | 6 | 3 | 2 | ï 1 | 3 | 2 | - | | | | - | 1 | | | | | 22 |
| Other infective & parasitic diseases | | | | | | | | | | | | | | | | | | |
| 120-138 | | | | | | | | | 1 | ' | 2 | | | 1 | | | | 4 |
| MALIGNANT NEOPLASM | | | | | | | | | | | | | | | | | | |
| Buccal cavity & pharnyx, 140-148 | | | | | | | | | | | 1 | | | 3 | 6 | 3 | 5 | 18 |
| Digestive organs & peritoneum, 150-159 | | | | | 1 | | | | 1 | 3 | 14 | 19 | 42 | 39 | 52 | 60 | 86 | 317 |
| Respiratory system, 160-165 | | | | | | | 1 | 3 | 8 | 2 15 | 6 12 | 19 | 15 25 | 19 26 | 15 26 | 13 35 | 13 57 | 92 226 |
| Breast & genitourinary organs, 170-181 Other & unspecified, 190-199 | | ī | 1 | 1 | 3 | | 1 | 3 | 4 | 6 | 5 | 6 | 6 | 7 | 4 | 9 | 19 | 73 |
| | | - | - | - | Ü | | - | •• | · | | | | | · | | | | |
| NEOPLASMS | | | | | | | | | | | | | | | | | | |
| Lymphatic & Haematopoietic tissues, | | 3 | 3 | . 3 | | 2 | | 2 | 3 | 4 | 2 | 6 | 8 | 7 | 11 | 7 | 15 | 76 |
| Benign neoplasms, 210-229 | | J | J | 3 | | _ | | | 0 | | | 1 | 2 3 | | | 1 | 2 | 6 |
| Unspecified Nature, 230-239 | | | 1 | | | | | | | | | 1 | 3 | 2 | | -: | -: | 8 |
| Allergic disorders, 240-245 | | | | | | •- | | 2 | 1 | | 1 | | 4 | 2 | 4 | 2 | 7 | 23 8 |
| Diseases — thyroid gland, 250-254 Diabetes, mellitus, 260 | | | | | | 1 | ï | 2 | 1 | . 4 | 1 | 2 | 5 | 7 | 10 | 7 | 15 | 58 |
| Other endocrice glands, 270-277 | 4 | | | | | | | | ï | | | 1 | ĭ | | 1 | | | 8 |
| Avitaminoses & other metabolic diseases, | | | | | | | | | | | | | | | | | | |
| 280-289 | 1 | | | | | | | | 1 | | | | | | | | 2 | . 4 |
| Diseases of blood-forming organs, | | | | | | | | | | | | | _ | | | | | |
| 290-299 Psychoses, 300-309 | | 1 | | | | | •• | | | . ; | 1 | 1 | 2 | | 1 | •- | 3 | 9 4 |
| Disorders of character, behavior & | | | | | | | | | | 1 | | 1 | | •- | | | 2 | 7 |
| intelligence, 320-326 | 2 | | | | | | | | 2 | 2 | 3 | 2 | | 2 | 1 | 2 | 3 | 19 |
| Vascular lesions affecting central nervous | | | | | | | | | | | | | | | | | | |
| system, 330-334 | 1 | | 1 | | 1 | | 1 | 2 | 4 | 10 | 11 | 16 | 32 | 52 | 94 | 130 | 263 | 618 |
| Inflammatory diseases of central nervous | | • | | | | | | | • | | _ | | • | | | | | 20 |
| system, 340-345 | 4 | 2 | 1 | | •- | •- | | | 3 | 1 | 2 | 1 | 3 | 1 | 1 | | 1 | 20 |
| Other diseases of central nervous system, | 1 | 3 | 2 | | | | 1 | 1 | | 1 | 4 | 1 | 2 | | 4 | 2 | 6 | 28 |
| 330-337 | 1 | 3 | 4 | | | | 1 | 1 | • | 1 | 4 | 1 | 2 | | 4 | 2 | Ο. | 20 |
| | | | | | | | | | | | | | | | | | | |

~ •

TABLE V (Continued)

MONTANA-1950-CAUSES OF DEATH BY AGE GROUPS

Abridged 6th Revision International Causes of Death

AGE GROUPS

| | | 1 | 5 | 10 | 15 to | 20 to | 25 t o | 30 to | 35 to | 40 to | 45 to | 50 to | 55 to | 60 to | 65 to | 70 to | 75+ | |
|---|---------|---------|---------|----------|----------|----------|------------------|----------|----------|----------|----------|----------|-----------|----------|-----------------|----------|-----------|-----------------|
| CAUSES AND CODE NUMBERS | 1 | to 4 | to 9 | to 14 | 19 | 24 | 29 | 34 | 39 | 44 | 49 | 54 | 59 | 64 | 69 | 74 | | Totals |
| Diseases of nerves & peripheral ganglia, 360-369 | | | | | | | | 1 | | | | | | | | | | 1 |
| Diseases of ear & mastoid process, | 4 | | 1 | | | | | | | | | | | | | | | 5 |
| Rheumatic fever, 400-402 | | | 1 | | 2 | | 3 | 3 5 | 10 | 10 | 6 | 5 | 11 | 12 | 9 | 9 | 19 | 8 99 |
| Art. & Deg. heart disease, 420-422 Other diseases — heart, 430-434 | | | | | ï | 2 | 1 2 | 6 | 17 2 | 29 6 | 59 10 | 11 | 146 12 | 23 | 264 27 | 29 | 572 66 | 1,636 193 |
| Hypertensive disease, 440-447 Diseases of arteries, 450-456 | | | | 1 | | ï | | ï | 1 1 | 3 | 10 | 10 | 17 4 | 30 6 | 41 11 | 34 10 | 113 98 | 260 135 |
| Diseases of veins & other dis. of circulatory system, 460-468 | | | 1 | | | 1 | | | | | 2 | 2 | 5 | 6 | 5 | 3 | 4 | 29 |
| Acute upper respiratory infections, | 1 | 1 | | | | | | | - | 1 | | | | | | | | 3 |
| Influenza, 480-493 Pneumonia, 490-493 | 2 19 | 2 10 | 1 4 | 2 | | | 1 | 2 | ï | 1 | 2 | 5 | 7 | 3 | 1 | 6 12 | 13 38 | 30 121 |
| Bronchitis, 500-502 Other diseases of respiratory system, | 3 | 2 | 1 | | | | | | | | | | | 1 | | | 1 | 8 |
| 510-527 | 1 | 2 | | | | | 1 | | | | 1 | 2 | 7 | 6 | 13 | 12 | 20 | 65 |
| 530-539 | | 1 | | | | | | | | | | 1 | •- | 1 | | | 2 | 5 |
| Diseases — stomach & duodenum, 540-545 | | - | | | | | -: | 1 | | 3 | 3 | 5. | 4 2 | 5 3 | 7 | 3 | 10 | 41 18 |
| Appendicitis, 500-553 Hernia — abd. cavity, 560-561 | •• | 1 | •• | | 1 | I | 1 | 1 | ** | | | | | 1 | 2 | 1 | 4 | 8 |
| Other diseases of intestines & peritoneum, 570-578 | 11 | 3 | | | | | 3 | 1 | | 1 | 2 | 2 | 1 | 3 | 6 | 10 | 23 | 66 |
| Diseases of liver, gallbladder & pancreas, 580-587 | 1 | ., | 3 | | .: | -; | 1 | 2 | 4 3 | 4 | 9 | 6 | 16 6 | 11 | 15 | 10 | 17 30 | 99 85 |
| Nephritis & nephrosis, 590-594 | 1 | | | | 2 | 4 | 3 | 4 | 3 | | 1 | 1 | 3 | 7 1 | 1 4 | 2 5 | 11 15 | 20 24 |
| Diseases of breast, ovary, fallopian tube & parametrium, 620-626 | | | | | | | | | | | | | | ., | 1 | | | 1 |
| Complications of pregnancy, 640-649 | | | | | 1 | 1 | 1 | | 1 | | | | ٠ | | | | | 4 |

- 174 -

| | | | | | | | | _ | | | | | | | _ | | | | | |
|--|-------------|----|-----|-----------------|-------|-------------|-----------------------|------------------|-----------------------|--------------|------------|---------|--------|----------------|-------------|----------|------------------|---|---------------------------|--|
| € | | | 79 | . 10 | | 6 | | | | | | | | | | | (je | | | |
| | | | | | | | | | | | | | | | | | | | | |
| Abortion, 650-652 | 9. | | | | | | 1 | | 1 | | | | | 1. | | | | | 2 | |
| Delivery with specified complication, 670-678 | | | | | | | 1 | 1 | | | | | | | | | | | 2 | |
| Complications of the puerperium, 680-689 Inf. of skin & subcutaneous tissue, | | | | | | ï | ٠ | ĺ | | | | | | | | | | | 2 | |
| Other dis. skin & subcutaneous tissue. | | | | | | | | | | •• | | •- | 1 | | • • | | 1 | | 2 | |
| 700-716 | 1 | | | | | | 1 | | 1 | | | 2 | | | ٠ | | 3 | | 8 | |
| Arthritis & rheumatism, 720-727 Osteomyelitis, 730-738 | | | | | | | | 1 | 1 | | | | 1 | 1 | 1 | | 3 | | 8 1 | |
| Other dis. musculoskeletal system, 740-749 | 2 70 | | | | | | | | | | | | | | | | | | 2 88 | |
| Congenital malformations, 750-759 | 70 | 10 | 2 | | 3 | | 1 | 1 | 1.7.7 | | | •- | 1 | | •- | . ** | •- | | 00 | |
| Birth injuries, asphyxia & infections of newborn, 760-769 | 127 136 | | | | | | | | | | | | | | | | | | 127 136 | |
| SYMPTOMS referable to systems or | 100 | | | | | | •• | •• | •• | | | • • | •• | | | •• | | | 100 | |
| organs, 780-789 Senility & ill-defined dis., 790-795 | 1 6 | | | | | | 1 | 3 | 2 | 1 2 | 7 1 | 5 1 | 5 3 | 16 7 | 12 8 | 15 15 | 26 83 | | 90 133 | |
| CAUSES — TOTALS | 412 | 55 | 30 | 10 | 19 | 24 | 33 | 57 | 83 | 125 | 186 | 250 4 | 413 | 535 | 693 | 720 1 | 694 | 5 | ,339 | |
| Railway accidents, 800-802 Motor veh. traffic accidents, 810-825 Motor veh. non-traffic accidents, 830-835 Other & veh. accidents, 840-845 Water transport. accidents, 850-858 | ï | 4 | 1 2 | 1 5 2 | 15 | 18 1 | 3 24 1 2 | 3 19 2 | 1 14 1 2 | 13 | 4 9 | 6 | 3 9 | 13 1 1 | 14 ï | 6 | 3 8 1 1 | | 21 180 7 3 14 | |
| Aircraft Accidents, 860-866 | | | 1 | | 1 | 4 | 2 | 1 | 2 | 2 | | | 1 | | | | | | 14 | |
| Acc. poisoning by solid & liquid substances, 870-888 | ١. | 1 | | | | | 1 | | | | | | | | | 1 | | | 3 | |
| Acc. poisoning by gases and vapors, 890-895 Accidental falls, 900-904 Other Accidents, 910-936 | 2 10 | 25 | 17 | 10 | 7 | 1 8 | 1 7 | 2 3 14 | 1 2 16 | 4 4 10 | 2 13 | 1 13 | 2 7 | 1 7 · 10 | 2 4 5 | 10 9 | 49 11 | | 11 88 182 | |
| Therap. misadventure & late complications of therap. procedure, 950-959 | | | 1_ | | | | | | | 1 | | | | | | | | | _2 | |
| ACCIDENTS — TOTALS | 13 | 34 | 13 | 19 | 26 | 32 | 41 | 44 | 39 | 34 | 28 | 21 | 22 | 33 | 26 | 27 | 73 | | 525 | |
| Suicide & self-inflicted injury, 970-979 | | | | | | 3 | 4 | 8 | 6 | 10 | 8 | 13 | 5 | 7 | 8 | 2 | 11 | | 85 | |
| Homicide & injury purposely inflicted by other persons, not in war, 980-985 | | | | | ٠ | 1 | 4 | 1 | 1 | | 1 | 2 | 4 | ٠ | | | 1 | | 15 | |
| Suicide & Homicide — TOTALS | | | | | | 4 | 8 | 9 | 7 | 10 | 9 | 15 | 9 | 7 | 8 | 2 | 12 | | 100 | |
| GRAND TOTALS | 425 | 89 | 43 | 29 | 45 | 60 | 82 | 110 | 129 | 169 2 | 223 | 286 4 | 144 | 575 7 | 727 | 749 1 | 779 | 5 | ,964 | |
| | | | | | | | | | | | | | | | | | | | | |

TABLE VIa General Summary of Births, Deaths, Marriages Divorces and Adoptions (1950-1951).

Births and Adoptions by Months 1950-1951

| | 19 | 50 | 1 | 1951 |
|-----------|-----------|-----------|--------|-----------|
| | Births | Adoptions | Births | Adoptions |
| TOTAL | 15,592 | 458 | 15,929 | 491 |
| January | 1,259 | 23 | 1,184 | 49 |
| February | 1,156 | 23 | 1,186 | 37 |
| March | 1,324 | 44 | 1,349 | 37 |
| April | 1,343 | 35 | 1,320 | 33 |
| May | 1,356 | 36 | 1,430 | 48 |
| June | 1,413 | 30 | 1,360 | 43 |
| July | 1,333 | 40 | 1,505 | 48 |
| August | 1,337 | 38 | 1,382 | 30 |
| September | 1,361 | 42 | 1,344 | 38 |
| October | 1,281 | 56 | 1,347 | 42 |
| November | 1,228 | 45 | 1,253 | 44 |
| December | 1,201 | 46 | 1,269 | 42 |
| TO | DTHE DV C | EV | | |

BIRTHS BY SEX

| | 1 9 5 0 | 195 1 |
|---------|-----------------------|--------------|
| Males | 7,997 | 8,107 |
| Females | 7,595 | 7,822 |

SEX RATIO (1950) 105 Males to, 100 Females SEX RATIO (1951) 104 Males to, 100 Females

By the Rate, per 1,000 Live Births

| | 195 | 0 | 195 | 1 |
|---------------|--------|--------|--------|-------|
| | Number | Rate | Number | Rate |
| White | 14,535 | 25.8 | 14,893 | 26.3 |
| *Mexican | 195 | ••••• | 151 | ••••• |
| Indian | | 49.7 | 841 | 50.6 |
| Black | 14 | 11.4 | 17 | 13.8 |
| Yellow | 18 | 24.6 | 27 | 30.0 |
| Brown | 4 | 9.6 | 5 | 12.0 |
| Illegitimates | 333 | 21.3 | 309 | 19.4 |
| Stillbirths | 233 | 14.9 | 248 | 15.6 |
| Twins | 174 | ****** | 172 | |
| Triplets | 0 | ****** | 2 | |

^{*} Mexican are listed as white in the federal census.

TABLE VIC DEATHS

By Months, Sex, Marital State and Color

| | 1950 | 1951 |
|-----------|--------------|-------|
| TOTAL | 5,817 | 5,964 |
| January | 525 | 480 |
| February | 478 | 465 |
| March | 537 | 558 |
| April | 47 5 | 513 |
| May | 506 | 484 |
| June | 481 | 468 |
| July | 493 | 485 |
| August | 417 | 500 |
| September | 446 | 461 |
| October | 501 | 528 |
| November | 483 | 488 |
| December | 4 7 5 | 534 |
| SEX | | |
| Males | 3,704 | 3,804 |
| Females | 2,113 | 2,160 |

Sex ratio 1950, 175 males to 100 females. Sex ratio 1951, 176 males to 100 females

MONTANA MARITAL STATE

| | 1950 | % | 1951 | % |
|----------|-------|------|-------|------|
| Single | 1,421 | 24.4 | 1,411 | 23.6 |
| Married | 2,458 | 42.4 | 2,569 | 43.1 |
| Widowed | 1,561 | 26.8 | 1,580 | 26.5 |
| Divorced | 250 | 4.4 | 261 | 4.4 |
| Unknown | 117 | 2.0 | 143 | 2.4 |

Color or Race

| White | 5.532 | 95.1 | 5,662 | 94.9 |
|---------|-------|------|-------|------|
| Indian | 229 | 3.9 | 252 | 4.2 |
| Mexican | 25 | 0.5 | 22 | 0.4 |
| Negro | 21 | 0.4 | 18 | 0.3 |
| Yellow | 9 | | 10 | 0.2 |
| Brown | 1 | | 0 | |

TABLE VId MONTANA MARRIAGES

| TOTAL | 1 950 7,23 5 | 1951 6,307 |
|-----------|-------------------------------|---------------|
| January | 348 | 420 |
| February | 367 | 400 |
| March | 411 | 472 |
| April | 464 | 428 |
| May | 491 | 405 |
| June | 932 | 823 |
| July | 6 9 1 | 498 |
| August | 850 | 657 |
| September | 826 | 642 |
| October | 657 | 533 |
| November | 568 | 469 |
| December | 630 | 555 |

Type of Marriage

| | Number | Percentage | Number | Percentage |
|----------------|--------|------------|--------|---------------|
| Civil ceremony | 2,092 | 28.9 | 1,779 | 28.2 |
| Religious | 4,878 | 67.4 | 4,325 | 6 8. 6 |
| Declaration | 265 | 3.7 | 198 | 3.1 |

Race

| | 1950 |) | 195 | 51 |
|---------|-------|---------------|-------|-------|
| | Groom | Bride | Groom | Bride |
| White | 7,075 | 7,07 5 | 6,180 | 6,173 |
| Indian | 105 | 117 | 80 | 91 |
| Mexican | 37 | 28 | 32 | 28 |
| Black | 12 | 11 | 5 | 4 |
| Yellow | 3 | 3 | 4 | 6 |
| Brown | 3 | 1 | 1 | 0 |
| • | | | 1191 | |

Marital Status

| Single | 5,292 | 4,976 | 4,569 | 4,280 |
|--------------|-------|----------------|-------|-------|
| Divorced | 1,659 | 1 ,7 90 | 1,441 | 1,561 |
| Widowed | 284 | 469 | 292 | 461 |
| Non-Resident | 1,409 | 1,236 | 1,364 | 1,098 |

TABLE VIe Montana Divorces

| 1950 | 1951 |
|-------|---|
| 1,951 | 1,837 |
| 116 | 137 |
| 145 | . 131 |
| 174 | 141 |
| 150 | 162 |
| 175 | 150 |
| 176 | 177 |
| 159 | 150 |
| 184 | 175 |
| 180 | 167 |
| 187 | 162 |
| 135 | 156 |
| 170 | 129 |
| | 1,951 116 145 174 150 175 176 159 184 180 187 |

Plaintiff

| | 195 | 50 | 1951 | | | |
|---------|--------|------|--------|------|--|--|
| | Number | % | Number | % | | |
| Husband | 511 | 26.2 | 486 | 26.4 | | |
| Wife | 1,432 | 73.4 | 1,346 | 73.3 | | |
| Other | 8 | 0.4 | 5 | 0.3 | | |

Grounds

| 1950 | 1951 |
|-------|---------------------------|
| 1,294 | 1,380 |
| 304 | 224 |
| 207 | 124 |
| 82 | 63 |
| 64 | 46 |
| | 1,294 304 207 82 |

Minor Children Involved

| | 19 5 0 | 1951 |
|-------------|---------------|------|
| Total | 965 | 959 |
| 1 child | 463 | 446 |
| 2 children | 300 | 297 |
| 3 children | 126 | 122 |
| 4 children | 45 | 53 |
| 5 children | 17 | 29 |
| 6 children | 10 | 6 |
| 7 children | 1 | 4 |
| 8 children | 3 | 1 |
| 9 children | 0 | 0 |
| 10 children | 0 | 1 |

TABLE VII

The Population, Births, Deaths, Infant and Maternal Deaths,
Communicoble Disease and Principal Causes of Death, with Rates
by the Years, 1910-1951.

(birth and death rates are per 1,000 population; infant and maternal deaths, per 1,000 live births; all others are per 100,000 population.)

| | DEA | THS | BIRTHS | | INFA MOI | NT | MATE | ERNAL ORT. | Т | ъ. В. | SMA | LLPOX | ТҮРІ | TOID | DI | IPH. |
|-----------------|-------|------|--------|------|-------------|-------|------------|---------------|-----|-------|-----|-------|------|------|------|------|
| Year Population | No. | Rate | No. | Rate | Deaths | Rate | D | R | D | R | D | R | D | R | D | R |
| 1910 376,053 | 3,999 | 10.6 | 6,124 | 16.2 | 714 | 116.6 | 62 | 10.1 | 340 | 89.9 | 2 | 0.5 | 151 | 39.9 | 61 | 16. |
| 1911 396,223 | 4,009 | 10.1 | 7,542 | 19.0 | 717 | 95.1 | 78 | 10.3 | 420 | 106.0 | 0 | 0.0 | 80 | 20.2 | 30 | 7. |
| 1912 414,184 | 4,083 | 9.9 | 8,133 | 19.6 | 660 | 81.2 | 75 | 9.2 | 468 | 113.0 | 2 | 0.5 | 57 | 13.8 | 13 | 3 |
| 1913 432,145 | 5,033 | 11.6 | 8,682 | 20.1 | 812 | 93.5 | 80 | 9.2 | 456 | 105.5 | 3 | 0.7 | 95 | 22.0 | 23 | 5 |
| 1914 450,106 | 4,846 | 10.8 | 9,969 | 22.1 | 834 | 83.7 | 100 | 10.0 | 472 | 104.9 | 5 | 1.1 | 66 | 14.7 | 36 | 8 |
| 1915 468,067 | 5,072 | 10.8 | 11,132 | 23.8 | 816 | 73.3 | 91 | 8.2 | 530 | 113.2 | 1 | 0.2 | 57 | 12.2 | 21 | 4 |
| 1916 486,028 | 5,791 | 11.9 | 11,300 | 23.2 | 970 | 85.8 | 108 | 9.6 | 521 | 107.2 | 2 | 0.4 | 53 | 10.9 | - 38 | 7 |
| 1917 503,989 | 6,589 | 13.1 | 11,600 | 23.0 | 1,090 | 94.0 | 143 | 12.3 | 549 | 108.9 | 6 | 1.2 | 79 | 15.7 | 40 | 7 |
| 1918 521,950 | 8,985 | 17.2 | 11,800 | 22.6 | 1,027 | 87.0 | 184 | 15.6 | 504 | 96.6 | 6 | 1.1 | 53 | 10.2 | 45 | 8 |
| 1919 539,911 | 5,786 | 10.7 | 12,017 | 22.3 | 962 | 80.1 | 141 | 11.7 | 480 | 88.9 | 9 | 1.7 | 39 | 7.2 | 41 | 7 |
| 1920 548,339 | 5,289 | 9.6 | 11,862 | 21.6 | 862 | 72.7 | 104 | 8.8 | 419 | 76.3 | 2 | 0.4 | 27 | 4.9 | 32 | 5 |
| 1921 547,238 | 4,693 | 8.6 | 12,127 | 22.2 | 805 | 66.4 | 89 | 7.4 | 356 | 65.1 | 3 | 0.5 | 20 | 3.7 | 47 | 8 |
| 1922 546,137 | 5,083 | 9.3 | 11,060 | 20.3 | 763 | 69.0 | 86 | 7.8 | 383 | 70.1 | 2 | 0.4 | 21 | 3.8 | 61 | 11 |
| 1923 545,036 | 4,893 | 9.0 | 10,524 | 19.3 | 748 | 71.1 | 79 | 7.5 | 395 | 72.5 | 3 | 0.6 | 16 | 2.9 | 51 | ç |
| 1924 543,935 | 4,970 | 9.1 | 10,283 | 18.9 | 683 | 66.4 | 67 | 6.5 | 434 | 79.8 | 3 | 0.6 | 16 | 2.9 | 56 | 10 |
| 1925 542,834 | 5,188 | 9.6 | 10,302 | 19.0 | 726 | 70.5 | 83 | 8.1 | 396 | 73.0 | 0 | 0.0 | 24 | 4.4 | 34 | 6 |
| 1926 541,733 | 5,395 | 10.0 | 10,008 | 18.5 | 757 | 75.6 | 7 9 | 7.9 | 377 | 69.6 | 1 | 0.2 | 14 | 2.6 | 18 | 3 |
| 1927 540,632 | 5,342 | 9.9 | 9,875 | 18.3 | 651 | 65.9 | 65 | 6.6 | 373 | 69.0 | 1 | 0.2 | 15 | 2.8 | 20 | 3 |
| 928 539,531 | 5,780 | 10.7 | 10,072 | 18.7 | 612 | 60.8 | 75 | 7.4 | 357 | 66.2 | 4 | 0.7 | 16 | 3.0 | 20 | 3 |
| 1929 538,430 | 5,748 | 10.7 | 10,080 | 18.7 | 640 | 63.5 | 84 | 8.3 | 357 | 66.3 | 1 | 0.2 | 32 | 5.9 | 12 | 2 |
| 930 537,606 | 5,435 | 10.1 | 10,004 | 18.6 | 569 | 57.0 | 67 | 6.7 | 337 | 62.7 | 1 | 0.2 | 16 | 3.0 | 4 | (|
| 931 540,337 | 5,280 | 9.8 | 9,638 | 17.8 | 583 | 60.5 | 70 | 7.2 | 329 | 60.9 | 0 | 0.0 | 12 | 2.2 | 7 | 1 |
| 932 542,522 | 5,294 | 9.8 | 9,091 | 16.8 | 467 | 51.4 | 60 | 6.6 | 307 | 56.6 | 0 | 0.0 | 13 | 2.4 | 2 | (|
| 933 544,707 | 5,212 | 9.6 | 8,953 | 16.4 | 461 | 51.5 | 51 | 5.7 | 282 | 51.8 | 0 | 0.0 | 14 | 2.6 | 17 | 3 |
| 1934 546,892 | 5,617 | 10.3 | 9,949 | 18.2 | 532 | 53.5 | 57 | 5.7 | 265 | 48.5 | 0 | 0.0 | 17 | 3.1 | 10 | 1 |

180

| - 6 | | - | | | | - | 4 | | | | | | A | - Or | , | 6 |
|--------------|---|---|--|---|--|--|--|--|--|---|---|---|--|---|---|---|
| 1935 549,077 | 6,291 | 11.5 | 10,029 | 18.3 | 602 | 60.0 | 52 | 5.2 | 257 | 46.8 | 1 | 0.2 | 12 | 2.2 | 14 | 2.5 |
| 1936 551,262 | 6,255 | 11.3 | 10,400 | 18.9 | 593 | 57.0 | 57 | 5.5 | 221 | 40.1 | 3 | 0.5 | 8 | 1.5 | 10 | 1.8 |
| 1937 553,447 | 6,128 | 11.1 | 10,248 | 18.5 | 518 | 50.5 | 38 | 3.7 | 241 | 43.5 | 2 | 0.4 | 11 | 2.0 | 10 | 1.8 |
| 1938 555,632 | 5,684 | 10.2 | 10,673 | 19.2 | 486 | 45.5 | 35 | 3.3 | 241 | 43.4 | 1 | 0.2 | 5 | 0.9 | 9 | 1.4 |
| 1939 557,817 | 5,901 | 10.6 | 10,897 | 19.5 | 534 | 49.0 | 35 | 3.2 | 248 | 44.5 | 0 | 0.0 | 1 | 0.2 | 3 | 0.5 |
| 1940 560,000 | 5,722 | 10.2 | 11,468 | 20.5 | 527 | 46.0 | 39 | 3.4 | 231 | 41.2 | 0 | 0.0 | 3 | 0.5 | 6 | 1.1 |
| 1941 530,000 | 5,673 | 10.7 | 11,545 | 21.8 | 438 | 37.9 | 21 | 1.8 | 214 | 40.4 | 0 | 0.0 | 2 | 0.4 | 13 | 2.5 |
| 1942 500,000 | 5,516 | 11.0 | 11,735 | 23.5 | 395 | 33.7 | 26 | 2.2 | 201 | 40.2 | 0 | 0.0 | 1 | 0.2 | 5 | 1.0 |
| 1943 470,000 | | 11.9 | 11,407 | 24.3 | 442 | 38.7 | 20 | 1.8 | 206 | 43.8 | 0 | 0.0 | 4 | 0.9 | 5 | 1.1 |
| 1944 487,300 | 5,662 | 11.6 | 10,943 | 22.5 | 395 | 36.1 | 16 | 1.5 | 175 | 35.9 | 0 | 0.0 | 1 | 0.2 | 6 | 1.2 |
| 1945 504,600 | 5,414 | 10.7 | 10,601 | 21.0 | 363 | 34.2 | 17 | 1.6 | 171 | 33.9 | 0 | 0.0 | 2 | 0.4 | 4 | 0.8 |
| 1946 521,900 | 5,595 | 10.7 | 12,858 | 24.6 | 448 | 34.8 | 18 | 1.4 | 164 | 31.4 | 0 | 0.0 | 2 | 0.4 | . 5 | 1.0 |
| 1947 539,200 | 5,760 | 10.7 | 15,086 | 28.0 | 484 | 32.1 | 16 | 1.1 | 152 | 28.2 | 0 | 0.0 | 1 | 0.2 | 2 | 0.4 |
| 1948 556,500 | 5,884 | 10.6 | 15,035 | 27.0 | 461 | 30.7 | 14 | 0.9 | 146 | 26.3 | 0 | 0.0 | 0 | 0.0 | 3 | 0.5 |
| 1949 573,800 | | 10.2 | 15,366 | 26.8 | 457 | 29.7 | 14 | 0.9 | 109 | 19.0 | 0 | 0.0 | 1 | 0.2 | 3 | 0.5 |
| • | - | 9.8 | • | 26.4 | 441 | 28.3 | 20 | 1.3 | 114 | 19.3 | 0 | 0.0 | 0 | 0.0 | 2 | 0.3 |
| 1951 594,100 | 5,964 | 10.0 | 15,929 | 26.8 | 425 | 26.7 | 10 | 0.6 | 85 | 14.3 | 0 | 0.0 | 1 | 0.2 | 0 | 0.0 |
| | 1936 551,262 1937 553,447 1938 555,632 1939 557,817 1940 560,000 1941 530,000 1942 500,000 1943 470,000 1944 487,300 1945 504,600 1946 521,900 1947 539,200 1948 556,500 1949 573,800 1950 591,000 | 1936 551,262 6,255 1937 553,447 6,128 1938 555,632 5,684 1939 557,817 5,901 1940 560,000 5,722 1941 530,000 5,673 1942 500,000 5,516 1943 470,000 5,601 1944 487,300 5,662 1945 504,600 5,414 1946 521,900 5,595 1947 539,200 5,760 1948 556,500 5,884 1949 573,800 5,878 1950 591,000 5,817 | 1936 551,262 6,255 11.3 1937 553,447 6,128 11.1 1938 555,632 5,684 10.2 1939 557,817 5,901 10.6 1940 560,000 5,722 10.2 1941 530,000 5,673 10.7 1942 500,000 5,516 11.0 1943 470,000 5,601 11.9 1944 487,300 5,662 11.6 1945 504,600 5,414 10.7 1946 521,900 5,595 10.7 1948 556,500 5,884 10.6 1949 573,800 5,878 10.2 1950 591,000 5,817 9.8 | 1936 551,262 6,255 11.3 10,400 1937 553,447 6,128 11.1 10,248 1938 555,632 5,684 10.2 10,673 1939 557,817 5,901 10.6 10,897 1940 560,000 5,722 10.2 11,468 1941 530,000 5,673 10.7 11,545 1942 500,000 5,516 11.0 11,735 1943 470,000 5,601 11.9 11,407 1944 487,300 5,662 11.6 10,943 1945 504,600 5,414 10.7 10,601 1946 521,900 5,595 10.7 12,858 1947 539,200 5,760 10.7 15,086 1948 556,500 5,884 10.6 15,035 | 1936 551,262 6,255 11.3 10,400 18.9 1937 553,447 6,128 11.1 10,248 18.5 1938 555,632 5,684 10.2 10,673 19.2 1939 557,817 5,901 10.6 10,897 19.5 1940 560,000 5,722 10.2 11,468 20.5 1941 530,000 5,673 10.7 11,545 21.8 1942 500,000 5,516 11.0 11,735 23.5 1943 470,000 5,601 11.9 11,407 24.3 1944 487,300 5,662 11.6 10,943 22.5 1945 504,600 5,414 10.7 10,601 21.0 1946 521,900 5,595 10.7 12,858 24.6 1947 539,200 < | 1936 551,262 6,255 11.3 10,400 18.9 593 1937 553,447 6,128 11.1 10,248 18.5 518 1938 555,632 5,684 10.2 10,673 19.2 486 1939 557,817 5,901 10.6 10,897 19.5 534 1940 560,000 5,722 10.2 11,468 20.5 527 1941 530,000 5,673 10.7 11,545 21.8 438 1942 500,000 5,516 11.0 11,735 23.5 395 1943 470,000 5,601 11.9 11,407 24.3 442 1944 487,300 5,662 11.6 10,943 22.5 395 1945 504,600 5,414 10.7 10,601 21.0 363 1946 | 1936 551,262 6,255 11.3 10,400 18.9 593 57.0 1937 553,447 6,128 11.1 10,248 18.5 518 50.5 1938 555,632 5,684 10.2 10,673 19.2 486 45.5 1939 557,817 5,901 10.6 10,897 19.5 534 49.0 1940 560,000 5,722 10.2 11,468 20.5 527 46.0 1941 530,000 5,673 10.7 11,545 21.8 438 37.9 1942 500,000 5,516 11.0 11,735 23.5 395 33.7 1943 470,000 5,661 11.9 11,407 24.3 442 38.7 1944 487,300 5,662 11.6 10,943 22.5 395 36.1 1945 | 1936 551,262 6,255 11.3 10,400 18.9 593 57.0 57 1937 553,447 6,128 11.1 10,248 18.5 518 50.5 38 1938 555,632 5,684 10.2 10,673 19.2 486 45.5 35 1939 557,817 5,901 10.6 10,897 19.5 534 49.0 35 1940 560,000 5,722 10.2 11,468 20.5 527 46.0 39 1941 530,000 5,673 10.7 11,545 21.8 438 37.9 21 1942 500,000 5,516 11.0 11,735 23.5 395 33.7 26 1943 470,000 5,601 11.9 11,407 24.3 442 38.7 20 1944 487,300 5,662 11.6 | 1936 551,262 6,255 11.3 10,400 18.9 593 57.0 57 5.5 1937 553,447 6,128 11.1 10,248 18.5 518 50.5 38 3.7 1938 555,632 5,684 10.2 10,673 19.2 486 45.5 35 3.3 1939 557,817 5,901 10.6 10,897 19.5 534 49.0 35 3.2 1940 560,000 5,722 10.2 11,468 20.5 527 46.0 39 3.4 1941 530,000 5,673 10.7 11,545 21.8 438 37.9 21 1.8 1942 500,000 5,516 11.0 11,735 23.5 395 33.7 26 2.2 1943 470,000 5,662 11.6 10,943 22.5 395 36.1 | 1936 551,262 6,255 11.3 10,400 18.9 593 57.0 57 5.5 221 1937 553,447 6,128 11.1 10,248 18.5 518 50.5 38 3.7 241 1938 555,632 5,684 10.2 10,673 19.2 486 45.5 35 3.3 241 1939 557,817 5,901 10.6 10,897 19.5 534 49.0 35 3.2 248 1940 560,000 5,722 10.2 11,468 20.5 527 46.0 39 3.4 231 1941 530,000 5,673 10.7 11,545 21.8 438 37.9 21 1.8 214 1942 500,000 5,516 11.0 11,735 23.5 395 33.7 26 2.2 201 1943 <td< td=""><td>1936 551,262 6,255 11.3 10,400 18.9 593 57.0 57 5.5 221 40.1 1937 553,447 6,128 11.1 10,248 18.5 518 50.5 38 3.7 241 43.5 1938 555,632 5,684 10.2 10,673 19.2 486 45.5 35 3.3 241 43.4 1939 557,817 5,901 10.6 10,897 19.5 534 49.0 35 3.2 248 44.5 1940 560,000 5,722 10.2 11,468 20.5 527 46.0 39 3.4 231 41.2 1941 530,000 5,673 10.7 11,545 21.8 438 37.9 21 1.8 214 40.4 1942 500,000 5,516 11.0 11,735 23.5 395 33.7</td><td>1936 551,262 6,255 11.3 10,400 18.9 593 57.0 57 5.5 221 40.1 3 1937 553,447 6,128 11.1 10,248 18.5 518 50.5 38 3.7 241 43.5 2 1938 555,632 5,684 10.2 10,673 19.2 486 45.5 35 3.3 241 43.4 1 1939 557,817 5,901 10.6 10,897 19.5 534 49.0 35 3.2 248 44.5 0 1940 560,000 5,722 10.2 11,468 20.5 527 46.0 39 3.4 231 41.2 0 1941 530,000 5,673 10.7 11,545 21.8 438 37.9 21 1.8 214 40.4 0 1942 500,000 5,516 11.0 11,735 23.5 395 33.7 26 2.2 201 <td< td=""><td>$\begin{array}{cccccccccccccccccccccccccccccccccccc$</td><td>1936 551,262 6,255 11.3 10,400 18.9 593 57.0 57 5.5 221 40.1 3 0.5 8 1937 553,447 6,128 11.1 10,248 18.5 518 50.5 38 3.7 241 43.5 2 0.4 11 1938 555,632 5,684 10.2 10,673 19.2 486 45.5 35 3.3 241 43.4 1 0.2 5 1939 557,817 5,901 10.6 10,897 19.5 534 49.0 35 3.2 248 44.5 0 0.0 1 1940 560,000 5,722 10.2 11,468 20.5 527 46.0 39 3.4 231 41.2 0 0.0 3 1941 530,000 5,673 10.7 11,545 21.8 438 37.9 21 1.8 214 40.4 0 0.0 2 1942 </td><td>1936 551,262 6,255 11.3 10,400 18.9 593 57.0 57 5.5 221 40.1 3 0.5 8 1.5 1937 553,447 6,128 11.1 10,248 18.5 518 50.5 38 3.7 241 43.5 2 0.4 11 2.0 1938 555,632 5,684 10.2 10,673 19.2 486 45.5 35 3.3 241 43.4 1 0.2 5 0.9 1939 557,817 5,901 10.6 10,897 19.5 534 49.0 35 3.2 248 44.5 0 0.0 1 0.2 1940 560,000 5,722 10.2 11,468 20.5 527 46.0 39 3.4 231 41.2 0 0.0 3 0.5 1941 530,000 5,673 10.7<!--</td--><td>1936 551,262 6,255 11.3 10,400 18.9 593 57.0 57 5.5 221 40.1 3 0.5 8 1.5 10 1937 553,447 6,128 11.1 10,248 18.5 518 50.5 38 3.7 241 43.5 2 0.4 11 2.0 10 1938 555,632 5,684 10.2 10,673 19.2 486 45.5 35 3.3 241 43.4 1 0.2 5 0.9 9 1939 557,817 5,901 10.6 10,897 19.5 534 49.0 35 3.2 248 44.5 0 0.0 1 0.2 3 1940 560,000 5,722 10.2 11,468 20.5 527 46.0 39 3.4 231 41.2 0 0.0 1 0.2 0 19 <td< td=""></td<></td></td></td<></td></td<> | 1936 551,262 6,255 11.3 10,400 18.9 593 57.0 57 5.5 221 40.1 1937 553,447 6,128 11.1 10,248 18.5 518 50.5 38 3.7 241 43.5 1938 555,632 5,684 10.2 10,673 19.2 486 45.5 35 3.3 241 43.4 1939 557,817 5,901 10.6 10,897 19.5 534 49.0 35 3.2 248 44.5 1940 560,000 5,722 10.2 11,468 20.5 527 46.0 39 3.4 231 41.2 1941 530,000 5,673 10.7 11,545 21.8 438 37.9 21 1.8 214 40.4 1942 500,000 5,516 11.0 11,735 23.5 395 33.7 | 1936 551,262 6,255 11.3 10,400 18.9 593 57.0 57 5.5 221 40.1 3 1937 553,447 6,128 11.1 10,248 18.5 518 50.5 38 3.7 241 43.5 2 1938 555,632 5,684 10.2 10,673 19.2 486 45.5 35 3.3 241 43.4 1 1939 557,817 5,901 10.6 10,897 19.5 534 49.0 35 3.2 248 44.5 0 1940 560,000 5,722 10.2 11,468 20.5 527 46.0 39 3.4 231 41.2 0 1941 530,000 5,673 10.7 11,545 21.8 438 37.9 21 1.8 214 40.4 0 1942 500,000 5,516 11.0 11,735 23.5 395 33.7 26 2.2 201 <td< td=""><td>$\begin{array}{cccccccccccccccccccccccccccccccccccc$</td><td>1936 551,262 6,255 11.3 10,400 18.9 593 57.0 57 5.5 221 40.1 3 0.5 8 1937 553,447 6,128 11.1 10,248 18.5 518 50.5 38 3.7 241 43.5 2 0.4 11 1938 555,632 5,684 10.2 10,673 19.2 486 45.5 35 3.3 241 43.4 1 0.2 5 1939 557,817 5,901 10.6 10,897 19.5 534 49.0 35 3.2 248 44.5 0 0.0 1 1940 560,000 5,722 10.2 11,468 20.5 527 46.0 39 3.4 231 41.2 0 0.0 3 1941 530,000 5,673 10.7 11,545 21.8 438 37.9 21 1.8 214 40.4 0 0.0 2 1942 </td><td>1936 551,262 6,255 11.3 10,400 18.9 593 57.0 57 5.5 221 40.1 3 0.5 8 1.5 1937 553,447 6,128 11.1 10,248 18.5 518 50.5 38 3.7 241 43.5 2 0.4 11 2.0 1938 555,632 5,684 10.2 10,673 19.2 486 45.5 35 3.3 241 43.4 1 0.2 5 0.9 1939 557,817 5,901 10.6 10,897 19.5 534 49.0 35 3.2 248 44.5 0 0.0 1 0.2 1940 560,000 5,722 10.2 11,468 20.5 527 46.0 39 3.4 231 41.2 0 0.0 3 0.5 1941 530,000 5,673 10.7<!--</td--><td>1936 551,262 6,255 11.3 10,400 18.9 593 57.0 57 5.5 221 40.1 3 0.5 8 1.5 10 1937 553,447 6,128 11.1 10,248 18.5 518 50.5 38 3.7 241 43.5 2 0.4 11 2.0 10 1938 555,632 5,684 10.2 10,673 19.2 486 45.5 35 3.3 241 43.4 1 0.2 5 0.9 9 1939 557,817 5,901 10.6 10,897 19.5 534 49.0 35 3.2 248 44.5 0 0.0 1 0.2 3 1940 560,000 5,722 10.2 11,468 20.5 527 46.0 39 3.4 231 41.2 0 0.0 1 0.2 0 19 <td< td=""></td<></td></td></td<> | $\begin{array}{cccccccccccccccccccccccccccccccccccc$ | 1936 551,262 6,255 11.3 10,400 18.9 593 57.0 57 5.5 221 40.1 3 0.5 8 1937 553,447 6,128 11.1 10,248 18.5 518 50.5 38 3.7 241 43.5 2 0.4 11 1938 555,632 5,684 10.2 10,673 19.2 486 45.5 35 3.3 241 43.4 1 0.2 5 1939 557,817 5,901 10.6 10,897 19.5 534 49.0 35 3.2 248 44.5 0 0.0 1 1940 560,000 5,722 10.2 11,468 20.5 527 46.0 39 3.4 231 41.2 0 0.0 3 1941 530,000 5,673 10.7 11,545 21.8 438 37.9 21 1.8 214 40.4 0 0.0 2 1942 | 1936 551,262 6,255 11.3 10,400 18.9 593 57.0 57 5.5 221 40.1 3 0.5 8 1.5 1937 553,447 6,128 11.1 10,248 18.5 518 50.5 38 3.7 241 43.5 2 0.4 11 2.0 1938 555,632 5,684 10.2 10,673 19.2 486 45.5 35 3.3 241 43.4 1 0.2 5 0.9 1939 557,817 5,901 10.6 10,897 19.5 534 49.0 35 3.2 248 44.5 0 0.0 1 0.2 1940 560,000 5,722 10.2 11,468 20.5 527 46.0 39 3.4 231 41.2 0 0.0 3 0.5 1941 530,000 5,673 10.7 </td <td>1936 551,262 6,255 11.3 10,400 18.9 593 57.0 57 5.5 221 40.1 3 0.5 8 1.5 10 1937 553,447 6,128 11.1 10,248 18.5 518 50.5 38 3.7 241 43.5 2 0.4 11 2.0 10 1938 555,632 5,684 10.2 10,673 19.2 486 45.5 35 3.3 241 43.4 1 0.2 5 0.9 9 1939 557,817 5,901 10.6 10,897 19.5 534 49.0 35 3.2 248 44.5 0 0.0 1 0.2 3 1940 560,000 5,722 10.2 11,468 20.5 527 46.0 39 3.4 231 41.2 0 0.0 1 0.2 0 19 <td< td=""></td<></td> | 1936 551,262 6,255 11.3 10,400 18.9 593 57.0 57 5.5 221 40.1 3 0.5 8 1.5 10 1937 553,447 6,128 11.1 10,248 18.5 518 50.5 38 3.7 241 43.5 2 0.4 11 2.0 10 1938 555,632 5,684 10.2 10,673 19.2 486 45.5 35 3.3 241 43.4 1 0.2 5 0.9 9 1939 557,817 5,901 10.6 10,897 19.5 534 49.0 35 3.2 248 44.5 0 0.0 1 0.2 3 1940 560,000 5,722 10.2 11,468 20.5 527 46.0 39 3.4 231 41.2 0 0.0 1 0.2 0 19 <td< td=""></td<> |

— 181 —

TABLE VII (Continued)

| | | RLET | MEAS | SLES | W. C. | | INFLU. | | M'GITIS | | PO | LIO | AU | TOS | | | HEART | |
|------|------|------|------|------|------------|------|--------|--------------|------------|------|-----|-----|------|------|-----|--------------|--------------|-------|
| Year | D | R | D | R | D | R | D | R | D | R | D | R | D | R | D | R | D | R |
| 1910 | 61 | 16.1 | 16 | 4.2 | 41 | 10.8 | 24 | 6.3 | 1 | 0.3 | 17 | 4.5 | 5 | 1.3 | 157 | 41.5 | 257 | 67.9 |
| 1911 | . 37 | 9.3 | 49 | 12.4 | 27 | 6.8 | 15 | 3.8 | 3 | 0.8 | . 5 | 1.3 | 3 | 8.0 | 157 | 39.6 | 317 | 80.0 |
| 1912 | . 26 | 6.3 | 6 | 1.4 | 56 | 13.5 | 17 | 4.1 | 0 | 0.0 | 11 | 2.7 | 3 | 0.7 | 164 | 39. 6 | 305 | 73.6 |
| 1913 | 119 | 27.5 | 54 | 12.5 | 46 | 10.6 | 30 | 6.9 | 15 | 3.5 | . 8 | 1.9 | 15 | 3.5 | 207 | 47.9 | 381 | 88.2 |
| 1914 | . 33 | 7.3 | 27 | 6.0 | 18 | 4.0 | 22 | 4.9 | 10 | 2.2 | 4 | 0.9 | 26 | 5.8 | 223 | 49.5 | 387 | 86.0 |
| 1915 | 16 | 3.4 | 7 | 1.5 | 36 | 7.7 | 41 | 8.8 | 7 | 1.5 | 1 | 0.2 | - 31 | 6.6 | 223 | 47.6 | 407 | 87.0 |
| 1916 | . 19 | 3.9 | 36 | 7.4 | 7 9 | 16.3 | 58 | 11.9 | 20 | 4.1 | 24 | 4.9 | 42 | 8.6 | 247 | 50.8 | 469 | 96.5 |
| 1917 | 85 | 16.9 | 46 | 1.9 | 43 | 8.5 | 43 | 8.5 | 6 | 1.2 | 8 | 1.6 | 59 | 11.7 | 278 | 55.2 | 477 | 94.6 |
| 1918 | . 71 | 13.6 | 18 | 3.4 | 64 | 12.3 | 2,654 | 508.5 | 16 | 3.1 | 7 | 1.3 | - 64 | 12.3 | 279 | 53.5 | 476 | 91.2 |
| 1919 | 57 | 10.6 | 16 | 3.0 | 13 | 2.4 | 687 | 127.2 | 15 | 2.8 | 3 | 0.6 | 44 | 8.1 | 302 | 55.9 | 448 | 83.0 |
| 1920 | . 22 | 4.0 | 27 | 4.9 | 51 | 9.3 | 304 | 55.4 | 15 | 2.7 | 5 | 0.9 | 45 | 8.2 | 282 | 51.4 | 428 | 78.0 |
| 1921 | 10 | 1.8 | 35 | 6.4 | 69 | 12.6 | 49 | 9.0 | 7 | 1.3 | . 2 | 0.4 | 48 | 8.8 | 315 | 57.6 | 523 | 95.6 |
| 1922 | . 19 | 3.5 | 0 | 0.0 | 8 | 1.5 | 239 | 43.8 | 8 | 1.5 | 7 | 1.3 | 48 | 8.8 | 343 | 62.8 | 595 | 108.9 |
| 1923 | 17 | 3.1 | 19 | 3.5 | 23 | 4.2 | 158 | 29. 0 | 7 | 1.3 | . 6 | 1.1 | 49 | 9.0 | 333 | 61.1 | 5 7 5 | 105.5 |
| 1924 | 32 | 5.9 | 73 | 13.4 | 26 | 4.8 | 64 | 11.8 | 5 | 0.9 | 23 | 4.2 | 70 | 12.9 | 363 | 66.7 | 645 | 118.6 |
| 1925 | 21 | 3.9 | 5 | 0.9 | 63 | 11.6 | 109 | 20.1 | 5 | 0.9 | 6 | 1.1 | 98 | 18.1 | 379 | 69.8 | 672 | 123.8 |
| 1926 | . 25 | 4.6 | 21 | 3.9 | 45 | 8.3 | 241 | 44.5 | 2 0 | 3.7 | . 5 | 0.9 | 101 | 18.6 | 401 | 74.0 | 695 | 128.3 |
| 1927 | 32 | 5.9 | 30 | 5.5 | 15 | 2.8 | 147 | 27.2 | 66 | 12.2 | 4 | 0.7 | 77 | 14.2 | 414 | 76.6 | 815 | 150.8 |
| 1928 | 10 | 1.9 | 8 | 1.5 | 49 | 9.1 | 366 | 67.8 | 65 | 12.0 | 10 | 1.9 | 139 | 25.8 | 449 | 83.2 | 864 | 160.1 |
| 1929 | 16 | 3.0 | 46 | 8.5 | 21 | 3.9 | 212 | 39.4 | 60 | 11.1 | 0 | 0.0 | 126 | 23.4 | 467 | 86.7 | 809 | 150.3 |
| 1930 | 15 | 2,8 | 12 | 2.2 | 16 | 3.0 | 102 | 19.0 | 22 | 4.1 | 6 | 1.1 | 106 | 19.7 | 424 | 78.9 | 759 | 141.2 |
| 1931 | 11 | 2.3 | 3 | 0.5 | 46 | 8.5 | 152 | 28.1 | 13 | 2.4 | 15 | 2.8 | 127 | 23.5 | 420 | 77.7 | 915 | 169.3 |
| 1932 | 7 | 1.3 | 12 | 2.2 | 22 | 4.1 | 190 | 25.0 | 5 | 0.9 | 4 | 0.7 | 98 | 18.1 | 513 | 94.6 | 1,065 | 196.3 |
| 1933 | 12 | 2.2 | 15 | 2.8 | 15 | 2.8 | 173 | 31.7 | 3 | 0.6 | 2 | 0.4 | 119 | 21.8 | 508 | 93.3 | 1,087 | 199.6 |
| 1934 | 11 | 2.0 | 30 | 5.5 | 24 | 4.4 | 122 | 22.3 | 7 | 1.3 | 14 | 2.6 | 209 | 38.2 | 477 | 87.2 | 1,117 | 204.2 |
| | | | | | | | | | | | | | | | | | | |

-

| 1935 | 22 | 4.0 | 49 | 8.9 | 22 | 4.0 | 173 | 31.5 | 15 | 2.7 | 1 . | 0.2 | 161 | 29.3 | 528 | 96.2 | 1,299 | 236.6 |
|------|-----|-----|----|-----|-----|-----|-----|------|----|-----|-----|-----|-----|------|-----|-------|-------|-------|
| 1936 | 44 | 8.0 | 3 | 0.5 | 16 | 2.9 | 101 | 18.3 | 23 | 4.2 | 5 | 0.9 | 174 | 31.6 | 567 | 102.9 | 1,248 | 2264. |
| 1937 | | 2.2 | 2 | 0.4 | .14 | 2.5 | 244 | 44.1 | 7 | 1.3 | 6 | 1.1 | 177 | 32.0 | 566 | 102.3 | 1,395 | 252.1 |
| 1938 | .9 | 1.6 | 12 | 2.2 | 47 | 8.5 | 81 | 14.6 | .9 | 1.6 | 3 | 0.5 | 143 | 25.7 | 557 | 100.2 | 1,308 | 235.4 |
| 1939 | 8 | 1.4 | 16 | 2:9 | 16 | 2.9 | 99 | 17.7 | .4 | 0.7 | 1 | 0.2 | 149 | 26.7 | 643 | 115.3 | 1,486 | 266.4 |
| 1940 | 7 | 1.2 | 5 | 0.9 | . 5 | 0.9 | 77 | 13.7 | 6 | 1.1 | 7 | 1.2 | 154 | 27.5 | 640 | 114.3 | 1,447 | 258.4 |
| 1941 | 9 | 1.7 | 1 | 0.2 | 6 | 1.1 | 90 | 17.0 | 5 | 0.9 | 9 | 1.7 | 182 | 34.3 | 644 | 121.5 | 1,485 | 280.2 |
| 1942 | 3 | 0.6 | 0 | 0.0 | 12 | 2.4 | 26 | 5.2 | 7 | 1.4 | . 0 | 0.0 | 105 | 21.0 | 643 | 128.6 | 1,577 | 315.4 |
| 1943 | 3 | 0.6 | 6 | 1.3 | 18 | 3.8 | 58 | 12.3 | 5 | 1.1 | 10 | 2.1 | 87 | 18.5 | 613 | 130.4 | 1,564 | 332.8 |
| 1944 | 2 | 0.4 | 13 | 2.7 | 10 | 2.1 | 50 | 10.3 | 3 | 0.6 | 6 | 1.2 | 106 | 21.8 | 681 | 139.7 | 1.660 | 340.6 |
| 1945 | 1 | 0.2 | 1 | 0.2 | 2 | 0.4 | 47 | 9.3 | 3 | 0.6 | 10 | 2.0 | 118 | 23.4 | 658 | 130.4 | 1,603 | 317.7 |
| 1946 | . 0 | 0.0 | 3 | 0.6 | 2 | 0.4 | 25 | 4.8 | 3 | 0.6 | 5 | 1.0 | 166 | 31.8 | 662 | 126.8 | 1,629 | 312.1 |
| 1947 | 0 | 0.0 | 13 | 2.4 | 6 | 1.1 | 33 | 6.1 | 3 | 0.6 | 4 | 0.7 | 157 | 29.1 | 712 | 132.0 | 1,690 | 313.4 |
| 1948 | 0 | 0.0 | 12 | 2.2 | 6 | 1.1 | 13 | 2.3 | 1 | 0.2 | . 6 | 1.1 | 165 | 20.6 | 724 | 130.1 | 1,803 | 324.0 |
| 1949 | 4 | 0.7 | 3 | 0.5 | 2 | 0.3 | 13 | 2.3 | 3 | 0.5 | 13 | 2.3 | 152 | 26.5 | 729 | 127.1 | 2,002 | 348.9 |
| 1950 | 0. | 0.0 | 0 | 0.0 | 10 | 1.7 | 23 | 3.9 | 1 | 0.2 | 3 | 0.5 | 190 | 32.1 | 733 | 124.0 | 1,957 | 331.1 |
| 1951 | 0 | 0.0 | 9 | 1.5 | 1 | 0.2 | 30 | 5.0 | 5 | 0.8 | 6 | 1.0 | 187 | 31.5 | 726 | 122.2 | 2,159 | 363.4 |
| | | | | | | | | | | | | | | | | | | - } |
| | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | |
| | | . ' | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | |
| | | | | : | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | . ' |
| | | | | | | | | | | | | | | | | | | |

e 6

| NI | NEPII. | | PNEUM'NI.\ | | CIDE | номи | CIDE | ACCII | DENTS | APOP | LEXY | MLCO | HOL | ALL. C | |
|-----------|--------|-------|------------|------|------|------|------|-------|-------|------|------|------|------|--------------|-------|
| Year D | R | D | R | D | R | 1) | R | D | R | D | R | D | R | | R |
| 1910 222 | 58.7 | 282 | 74.6 | 81 | 21.4 | 37 | 9.8 | 514 | 135.9 | 112 | 29.6 | 56 | 14.7 | 800 | 211.5 |
| 1911 204 | 51.5 | 354 | 89.3 | 109 | 27.5 | - 51 | 12.9 | 447 | 112.8 | 126 | 31.8 | 40 | 10.1 | 725 | 183.0 |
| 1912 246 | 59.4 | 387 | 93.4 | 83 | 20.0 | 59 | 14.2 | 475 | 114.7 | 155 | 37.4 | 63 | 15.2 | 711 | 171.7 |
| 1913 247 | 57.2 | 508 | 117.6 | 115 | 26.6 | 44 | 10.2 | 564 | 130.5 | 152 | 35.2 | 74 | 17.1 | 921 | 213.1 |
| 1914 249 | 55.4 | 464 | 103.1 | 125 | 27.8 | 58 | 12.9 | 498 | 110.6 | 170 | 37.8 | 66 | 14.6 | 777 | 172.6 |
| 1915 339 | 72.4 | 511 | 109.2 | 103 | 22.0 | 53 | 11.3 | 556 | 118.8 | 196 | 41.9 | 66 | 14.1 | 790 | 168.8 |
| 1916 359 | 73.9 | 536 | 110.3 | 113 | 23.2 | 86 | 17.7 | 695 | 143.0 | 210 | 43.2 | 86 | 17.7 | 949 | 195.3 |
| 1917 358 | 71.0 | 690 | 136.9 | 113 | 22.4 | 92 | 18.3 | 870 | 172.6 | 212 | 42.1 | 124 | 24.6 | 1,032 | 204.8 |
| 1918 322 | 61.7 | 1,298 | 248.7 | 97 | 18.6 | 58 | 11.1 | 625 | 119.7 | 213 | 40.8 | - 60 | 11.5 | 3,536 | 677.5 |
| 1919 265 | 49.1 | 530 | 98.2 | 86 | 15.9 | 43 | 8.0 | 509 | 94.3 | 243 | 45.0 | 10 | 1.9 | 1,442 | 267.1 |
| 1920 273 | 49.7 | 576 | 104.9 | 86 | 15.7 | 46 | 8.4 | 473 | 86.2 | 246 | 44.8 | 10 | 1.8 | 924 | 168.3 |
| 1921 279 | 51.0 | 412 | 75.3 | 94 | 17.2 | 41 | 7.5 | 388 | 70.9 | 242 | 44.2 | 19 | 3.4 | 689 | 125.9 |
| 1922 298 | 54.6 | 482 | 88.3 | . 88 | 16.1 | 42 | 7.7 | 433 | 79.3 | 255 | 46.7 | 22 | 4.0 | 830 | 152.0 |
| 1923 267 | 49.0 | 399 | 73.2 | 77 | 14.1 | 26 | 4.8 | 470 | 86.2 | 263 | 48.3 | 25 | 4.6 | 815 | 149.5 |
| 1924 295 | 54.2 | 364 | 66.9 | 79 | 14.5 | 37 | 6.8 | 519 | 95.4 | 272 | 50.0 | 15 | 2.8 | 806 | 148.2 |
| 1925 301 | 55.5 | 437 | 80.5 | 102 | 18.8 | 51 | 9.4 | 505 | 93.0 | 322 | 59.3 | 41 | 7.6 | 753 | 138.7 |
| 1926 '236 | 43.6 | 501 | 92.5 | 92 | 17.0 | 45 | 8.3 | 477 | 88.0 | 327 | 60.4 | 27 | 5.0 | 862 | 159.1 |
| 1927 325 | 60.1 | 372 | 68.8 | 113 | 20.9 | 37 | 6.8 | 506 | 93.6 | 290 | 53.6 | 58 | 10.7 | 795 | 147.1 |
| 1928 333 | 61.7 | 458 | 84.9 | 110 | 20.4 | 44 | 8.2 | 568 | 105.3 | 336 | 62.3 | 48 | 8.9 | 997 | 184.8 |
| 1929 395 | 73.4 | 439 | 81.5 | 116 | 21.5 | 54 | 10.0 | 526 | 97.7 | 320 | 59.4 | 60 | 11.1 | 863 | 160.3 |
| 1930 395 | 73.5 | 425 | 79.1 | 136 | 25.3 | 57 | 10.6 | 498 | 92.6 | 357 | 66.4 | 69 | 12.8 | 635 | 118.1 |
| 1931 336 | 62.2 | 384 | 71.1 | 126 | 23.1 | 39 | 7.2 | 510 | 94.4 | 346 | 64.0 | 33 | 6.1 | 683 | 126.4 |
| 1932 348 | 64.1 | 348 | 64.1 | 125 | 23.0 | 45 | 8.3 | 442 | 81.5 | 358 | 66.0 | 15 | 2.8 | 658 | 121.3 |
| 1933 315 | 57.8 | 321 | 58.9 | 114 | 20.9 | 30 | 5.5 | 508 | 93.3 | 354 | 65.0 | 24 | 4.4 | 611 | 112.2 |
| 1934 350 | 64.0 | 416 | 76.1 | 104 | 19.0 | 39 | 7.1 | 576 | 105.3 | 379 | 69.3 | 20 | 3.7 | 601 | 109.9 |
| 1935 355 | 64.7 | 674 | 122.8 | 96 | 17.5 | 34 | 6.2 | 552 | 100.5 | 450 | 82.0 | 14 | 2.5 | 689 | 125.5 |
| 1936 347 | 62.9 | 631 | 114.5 | 102 | 18.5 | 26 | 4.7 | 660 | 119.7 | 447 | 81.1 | 25 | 4.5 | 524 | 95.1 |
| 1937 305 | 55.1 | 528 | 95.4 | 101 | 18.2 | 27 | 4.9 | 599 | 108.2 | 416 | 75.2 | 32 | 5.8 | 646 | 116.7 |
| 1938 314 | 56.5 | 355 | 63.9 | 103 | 18.5 | 26 | 4.7 | 587 | 105.6 | 437 | 78.6 | 27 | 4.9 | 514 | 92.5 |
| 1939 327 | 58.6 | 310 | 55.6 | 106 | 19.0 | 27 | 4.8 | 531 | 95.2 | 438 | 78.5 | 23 | 4.1 | 5 2 8 | 94.7 |
| 1940 295 | 52,7 | 321 | 57.3 | 120 | 21.4 | 29 | 5.2 | 539 | 96.2 | 452 | 80.7 | 41 | 7.3 | 434 | 77.5 |
| 1941 272 | 51.3 | 262 | 49.4 | 93 | 17.5 | 18 | 3.4 | 548 | 103.4 | 486 | 91.7 | 19 | 3.6 | 452 | 85.3 |
| | | | | | | | | | | | | | | | |

-184

| 1942 284 | 56.8 | 235 | 47.0 | 98 | 19.6 | 17 | 3.4 | 468 | 93.6 | 477 | 95.4 | 16 | 3.2 | 360 | 72.0 |
|----------|------|-----|------|------------|------|----|-----|-----|-------|---------|-------|----|-----|-----|------|
| 1943 271 | 57.7 | 248 | 52.8 | 68 | 14.5 | 15 | 3.2 | 580 | 123.4 | 453 | 96.4 | 12 | 2.6 | 398 | 84.7 |
| 1944 292 | 59.9 | 250 | 51.3 | 53 | 10.9 | 13 | 2.7 | 494 | 101.4 | 539 | 110.6 | 7 | 1.4 | 358 | 73.5 |
| 1945 279 | 55.3 | 196 | 38.8 | 7 9 | 15.7 | 19 | 3.8 | 498 | 98.7 | 489 | 96.9 | 13 | 2.6 | 307 | 60.8 |
| 1946 276 | 52.9 | 235 | 45.0 | 98 | 18.8 | 22 | 4.2 | 517 | 99.1 | 490 | 93.9 | 15 | 2.9 | 267 | 51.2 |
| 1947 266 | 49.3 | 223 | 41.4 | 96 | 17.8 | 14 | 2.6 | 537 | 100.0 | 495 | 91.8 | 19 | 3.5 | 256 | 47.5 |
| 1948 247 | 44.4 | 189 | 34.0 | 88 | 15.8 | 15 | 2.7 | 575 | 103.3 | 581 | 104.4 | 14 | 2.5 | 336 | 60.4 |
| 1949 129 | 22.5 | 144 | 25.1 | 89 | 15.5 | 21 | 3.7 | 552 | 96.2 | 601 | 104.7 | 17 | 3.0 | 201 | 35.0 |
| 1950 80 | 13.5 | 157 | 26.6 | 123 | 20.8 | 24 | 3.7 | 545 | 92.2 | 619 | 104.7 | 14 | 2.4 | 182 | 30.8 |
| 1951 85 | 14.3 | 121 | 20.4 | 85 | 14.3 | 15 | 2.5 | 525 | 88.4 | 618 | 104.0 | 17 | 2.9 | 159 | 26.8 |
| | | | | | | | 16 | | | - conti | ~1000 | | | | |

| DI | ABET | ES |
|----|------|----|
| | | |

| The same of the same of | 5-300 | |
|-------------------------|-------|------|
| | D | R |
| 1940 | 109 | 19.5 |
| 1941 | 110 | 20.8 |
| 1942 | 108 | 21.6 |
| 1943 | 116 | 24.7 |
| 1944 | 126 | 25.9 |
| 1945 | 129 | 25.6 |
| 1946 | 137 | 26.3 |
| 1947 | 130 | 24.1 |
| 1948 | 118 | 21.2 |
| 1949 | 102 | 17.8 |
| 1950 | 49 | 8.3 |
| 1951 | 58 | 9.8 |

